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THE BRICKBVILDER

OFFICE 85 WATER STREET BOSTON

THE BRICKBUILDER.

AN ILLUSTRATED MONTHLY DEVOTED TO THE ADVANCEMENT OF ARCHITECTURE IN MATERIALS OF CLAY.

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A QUESTION OF ETHICS.

COURTS of law do not exactly teach architecture, but we listened to an interesting exposition upon the ethics of the profession a short time since in a court where we had the misfortune to be called as a witness in a suit brought by an architect to recover commission. A brother architect was on the stand, having been called by the plaintiff to testify in regard to certain points regarding professional charges. On the cross-examination the opposing counsel sought to bring out the suggestion that the plaintiff had first approached the defendant, whom he had tried to interest in himself to the extent of accepting plans, and the question was asked, "Is it not very common for architects to offer to submit plans on a venture, hoping that they may be accepted?" The question was promptly objected to by the plaintiff's counsel. The objection, however, was not sustained by the judge, who made the remark that the architectural profession was not at all like that of the doctor or the lawyer, members of which never solicited work, and that of course it was manifest and perfectly well known that all architects were glad to compete. We confess we have been interested in trying to reason out how the judge arrived at such an opinion, and can only conclude that he must have been somewhat unfortunate in his architectural acquaintances, for all of our observation and our knowledge of the profession here and elsewhere point to a directly opposite conclusion, and we believe that it is the rule rather than the exception for reputable architects to decline to speculate on their chances. The incident shows how little the architect's point of view is appreciated even by the educated portion of the community. As a matter of fact, among the architects who would be taken as types of the profession, their position in relation to their clients is precisely that of the lawyer, and if the time ever comes when the practise of architecture is surrounded with the same safeguards against ignorance that the law extends to the legal profession, it is quite likely that the architect's standpoint will be better understood. It may not be necessary for the public which pays for and occupies the houses which architects build to thoroughly appreciate the peculiar relations which necessarily exist between the honest, educated practitioner and his work, but, on the other hand, it is not fairly supposable that the architect should be ready at all times to scramble for his work and compete, cut prices, or do most anything to get a job. Recognition of a higher ideal will come with the growth of good architecture. One has only to look back a comparatively few years to see that the necessity for groveling is rapidly diminishing, and that though a learned judge may be disposed to class architects, hod carriers, and others indiscriminately, the profession has won for itself a place which commands a very decided measure of respect. The temptation to get work at any price is a constant one, and while the profession is so open to any one, irrespective of his ability, it is not strange that the position of the architect should be frequently misconstrued, and the good and the bad lumped together in a single category. It is the saving remnant who have high ideals, who constitute the real measure of what the profession stands for, and the leaven of that remnant is a force which is constantly increasing.

THE old New England best parlor, which was closed against sunlight, moths, and the family, only to be opened on state occasions for the benefit of strangers, might almost be termed a prototype of the spirit which is so manifest in our public buildings and which prompts some one, we cannot say whether architect or owner, to turn his best front towards the street and to content himself with the commonest kind of work on the inner courts or back alleys. This might have been permissible at one time when all our buildings were carried to a nearly uniform height, but since the advent of modern commercial methods, there is hardly a street which does not show some tall structure elbowing itself above its neighbors, offering a very brave array of finery towards the street, but ghastly in its nakedness elsewhere. This is surely an instance of inherent, if unconscious, bad taste. There is no good reason why a building should not be presentable on all sides. The argument that it is often built on party lines does not amount to a great deal, for it is the exception to find an adjoining owner who would not be willing, for a reasonable compensation, to allow the eaves to project over his property, and we venture the statement that, in most cases of public buildings, the neighbors would be quite ready to welcome such partial infringement for the sake of the added looks of the building. We need not expend elaboration on the unimportant sides of the building. There is no violation of good taste in recognizing that a building has a decided front, that one portion of it is to mark the entrance, or that the most desirable portions of the interior are to give on a façade which bears the greatest amount of elaboration; but to assume that we can spread our lavishness along the whole expanse of a front and then suddenly saw it off at the turning of a corner is to admit that our buildings are not designed as a whole, but that a frontispiece is put up simply for show. Without following this idea to the extent which Mr. Ruskin has seen fit to insist upon, we certainly can expect that when a property owner is to shoulder himself above his neighbors, he ought, for his own sake and

for the sake of the public that permits him to do such things, to see to it that the building, which is pretty sure to be visible in its entirety from several directions, shall present at least a dignified, respectable appearance on its less important sides. The extra cost of doing this is far less than is often spent by property owners in advertising the fact that such a building is in existence, and yet the beautifying of the plain walls, or, perhaps, to put it better, the rationalization of the plain walls, as a mere advertisement, would be worth all it would cost.

AND this suggests the oft-repeated query of our brick manufacturers, why the architects seem to prefer old, rough, misshapen brick to the product upon which the manufacturers have expended so much more thought and care. From an architectural standpoint the answer is natural enough. We have seen repeated instances of side walls of buildings which, as far as the material went, was more interesting than the press brickwork of the front. This was not, however, because common brick was used in one case and pressed in another, but was simply one of those accidental happenings which sometimes set at naught the wisdom of the academy, just as a tumbledown, dilapidated, old mill may be much more beautiful than a smart, new affair. We have yet to see an interesting effect produced by the use of a poor quality of brick that could not be duplicated and bettered with the use of a good brick, and the cause for rejoicing over picturesque old brick walls is not in the quality of the material so much as in the way it is used. If good brick be used with a mixture of picturesque appreciation, such as might find expression in some of the old things we admire, the result would be undoubtedly better than when we are obliged to content ourselves with the ruder product. Other times, other manners. The rough brick which might have pleased the medievalists cannot lend itself rightly to modern work. We can get the picturesque effects, but we must use better material, and, fortunately, the picturesque qualities are not a concomitant solely of crudeness of manufacture.

PERSONAL, CLUB, AND SUNDRY NEWS ITEMS.

FREDERICK N. REED, architect, has removed his office to 52 Kilby Street, Boston.

WM. H. GORNPERT, architect, 2761 Atlantic Avenue, Brooklyn, N. Y., would be glad to receive samples and catalogues.

THE Columbia College scholarship for this year goes to William C. Ayres, a draughtsman in the office of Ernest Flagg.

R. MAURICE TRIMBLE, architect, has opened an office in the Ferguson Building, Pittsburgh, Pa. Samples and catalogues desired.

THEODOR G. AHRENS, architect, has opened an office at No. 8 East Lexington Street, Baltimore, Md. Samples and catalogues desired.

ERNEST FLAGG has been appointed by the Government (Navy Department), architect for the new building to be erected at Annapolis. It is estimated that the total cost of these buildings will be fully $10,000,000.

AT the thirty-second annual convention of the American Institute of Architects, held at Washington, November 1, 2, and 3, the following officers were elected: President, Henry Van Brunt; first vice-president, W. L. B. Jenney; second vice-president, J. W. McLaughlin; secretary and treasurer, Glenn Brown; auditors, S. A. Treat and W. G. Preston; directors, for one year, F. M. Day, J. C. Hornblower, T. D. Evans; for two years, R. W. Gibson, L. T. Scofield, W. M. Poindexter; for three years, A. G. Everett, W. C. Smith, G. B. Post.

THE limited competition for the Shattuck Prize, offered by the Mechanics' Charitable Association of Boston, for the best design for workingmen's houses, has been decided by the award of the prize to R. Clipston Sturgis, of Boston. The open competition was decided in favor of George E. Barton and George G. Will, draughtsmen in Mr. Sturgis's office.

The amount of the limited competition prize was $750, and that of the open competition, $450.

The judges were Prof. F. W. Chandler, John M. Carrere, and H. Langford Warren.

THE drawings submitted in competition for the Cornell University Traveling Fellowship in Architecture were exhibited and judged at Washington during the recent meeting of the A. I. A.

The competition program called for a Grand Stairway for a Metropolitan Library, the winner to receive $2,000, paid in instalments, in the manner common to all University Fellowships. W. Herbert Dole, a draughtsman in the office of Ernest Flagg, New York City, was placed first, while Floyd Y. Parsons and Ira C. Sheldon were given honorable mention.

The judges were John M. Carrere and William A. Boring, of New York City, and Edward B. Green, of Buffalo.

A REGULAR meeting of the T Square Club, Philadelphia, was held on Wednesday evening, November 2, at which the subject for competition was "The Porte-Cochère of a Theater." First mention was awarded to Alfred M. Githens; second mention to Wetherill P. Trout, and third mention to Oscar M. Hohanson.

The Club gave a "smoker" on the evening of November 16, at which the drawings entered in competition for St. Paul's Church at Overbrook were exhibited. Professor Laird explained how the designs were viewed by the church committee in making the awards.

At a meeting held on the evening of November 2, the Club gave $100 as a nucleus of a fund to be used for the purpose of erecting in Philadelphia a permanent memorial to commemorate the successful termination of the late war with Spain.

ILLUSTRATED ADVERTISEMENTS.

THE medallion of Thomas Jefferson shown herewith is modeled from a painting by Gilbert Stuart. It will be used in connection with other work in the vestibule of the Jefferson Medical College, Philadelphia; designed by Mr. James Windrim. The work

is being executed by the New York Architectural Terra-Cotta Company.

In the advertisement of Fiske, Homes & Co., page x, is illustrated one of their mantels, erected in a billiard room. A residence at Buffalo, of which Green & Wicks were the architects, is shown in the advertisement of The Harbison & Walker Company, page xv. The United States Post-Office at Madison, Ind., is shown in the advertisment of the Ludowici Roofing Tile Company, page xxvi.

The American Schoolhouse. XIII.

BY EDMUND M. WHEELWRIGHT.

SPECIFICATIONS FOR A SCHOOL BUILDING.

(*Concluded.*)

SECT. 11. MORTAR. — (*a*) Mortar for laying brick and stone masonry shall be prepared from sand and cement of the qualities before specified. The ingredients are to be evenly spread and thoroughly mixed dry, in the proportion of one part by measure of cement to two parts of sand, and a moderate quantity of water is to be afterwards added to produce a paste of the proper consistency; the whole to be quickly and thoroughly worked.

PIERCE GRAMMAR SCHOOL, BROOKLINE, MASS.
Julius A. Schweinfurth, Architect.

(*b*) Cement mortar shall be mixed in such quantities as will allow it to be used very soon after being mixed, and any cement mortar not used within three quarters of an hour after being first wet shall be rejected.

SECT. 12. ASPHALT. — (*a*) Give one thick coat of hot asphalt to rough brickwork of exterior door and window jambs and outside of foundation walls and brickwork below top of ground.

(*b*) Waterproof bottom and sides of trenches and conduits with two moppings of hot asphalt on two thicknesses of heavy tarred paper.

(*c*) Cover in best manner with best Neuchâtel or Syssel asphalt the floors of rooms so noted on plans.

SECT. 13. EXTERIOR STONEWORK. — (*a*) Provide and set exterior trimmings as shown on ¼ in. and ¾ in. scale drawings; all to be of best quality [Blank] sandstone, [Blank] limestone, [Blank] marble, and to the satisfaction of the architect.

(*b*) All moldings must be cut sharp and true, exposed surfaces to be fine crandalled [hand tooled] in a manner satisfactory to the architect.

SECT. 14. STONE SETTING. — Set all cut stone in best manner in cement mortar, as above specified, and clamp well to brickwork with galvanized-iron clamps.

SECT. 15. NORTH RIVER STONE. — (*a*) Furnish and set 4 in. North River bluestone slabs planed on top for pipe trenches and conduits.

(*b*) Furnish and set outside steps of best quality North River bluestone, fine axed in best manner.

SECT. 16. FLOORS, AND ROOF FRAMING. — (*a*) Provide all materials for and construct all floors and roof of wholly incombustible materials. This construction may be either: —

(1) Steel frames, girders and beams, with flat terra-cotta arch construction, with beams protected by end-construction soffit tile; all thoroughly filled about steelwork with cement mortar and filled to top of grounds with concrete.

(2) The concrete and steel construction of the [Blank] Company for floors.

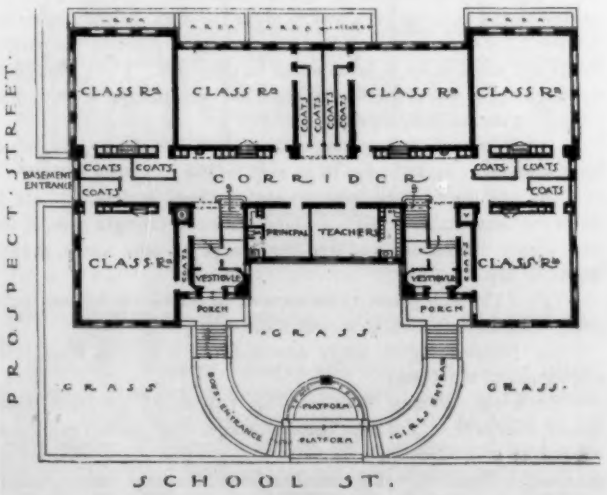
(3) The fire-proof and steel construction of the [Blank] Company.

(*b*) Whichever construction is used, it will be required to safely sustain the load required by the building laws of the city of [Blank], and the contractor shall present to the architect, before applying for permit, a complete set of framing plans, showing the method of construction proposed, and subject to the approval of the architect.

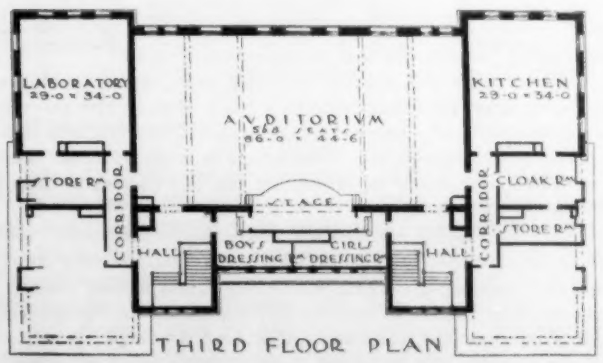
(*c*) The floors shall be finished level and true on under side, and be arranged for plastering of ceilings directly on floor construction, except where ceilings are furred down.

[(*d*) Supply and set the steel framing for walls, which shall be of ample strength to sustain the superstructure, and shall be subject to the approval of the architect. Sectional drawings of the construction shall be submitted to the architect for approval.]

(*e*) Furnish and set all plates, connections, anchors, ties, T's, bolts, and washers requisite for the construction of said floors, steel framing for walls and roofs in the best and most workmanlike manner, and do all drilling and jobbing to fully complete the work. All



FIRST FLOOR.



PIERCE GRAMMAR SCHOOL, BROOKLINE, MASS.
Second story is a duplicate of first story, except that in place of teachers' rooms, there is a room to be used for teaching sewing.

iron and steel work is to have one heavy coat of good red lead and oil, when delivered, and one coat after being set in position.

SECT. 17. IRONWORK.—(*a*) In addition to the iron and steel work required under section 16, furnish all iron and steel shown on plans.

(*b*) All ironwork is to have one heavy coat of good red lead and oil when delivered, and one coat after being set in position.

(*c*) Furnish for all openings lintels of form and size shown on ¼ in. scale drawings. Furnish lintels required for vent and heat openings.

(*d*) Furnish all beams, ties, braces, lintels, railroad irons, masons' iron, etc., not specially called for, but required for the completion of the building.

(*e*) Furnish in accordance with design shown on ¾ scale drawing and in accordance with full-size drawing, the window and door grilles, to be set in best manner by the contractor.

(*f*) Furnish boiler flue of ¼ in. boiler iron, [Blank] in diameter, thoroughly riveted, and securely set same with wrought-iron supports.

SECT. 18. IRON STAIRCASE, ETC.—(*a*) The contractor shall take all measurements at the building, and erect the several flights of stairs in a neat and workmanlike manner, furnishing all bolts, nuts, screws, washers, etc. All beams and channels are to have, at bearings, plates 1 by 8 by 12 ins., and other sizes as marked on framing plans, and where members are framed they are to be coped and put together with angle plates, properly bolted; also do all drilling, boring, and jobbing to fully complete the work. All the flights are to have channel-iron stringers; the landings of channel-iron and T and angle-iron framing.

(*b*) All girders, beams, channels, angles, etc., are to be smooth, straight, and true, and all cast work is to be from soft gray iron, free from sand-holes or other blemishes, to be smoothly finished up, and all mouldings are to be clean and sharp.

(*c*) Stairs to be built strictly in accordance with the full-size drawings.

SOUTH BOSTON HIGH SCHOOL, SOUTH BOSTON, MASS.
Herbert D. Hale, Architect.

(*d*) [Rail to be of wrought-iron pipe set as shown on ¾ in. detail drawing.] Posts to be surmounted by large ball as shown.

(*e*) Treads and landings to be of cast iron, and to be completely covered with [Mason safety treads]. [⅛ in. rubber mat like sample in architect's office.]

(*f*) Paint the whole two good coats of good red lead and oil, one at foundry, and one when stock is delivered at site.

SECT. 19. ROOFING AND METAL WORK.—(*a*) Cover all roofs, except those shown to be of copper, with best 5-ply composition roofing, put on in the best manner on top of roof.

[Cover roofs with heaviest Neponset paper, and lay with the best even color, non-fading, Standard No. 1 Monson blue slate, or equivalent, subject to approval of the architect, and laid with 4-in. head cover, well bonded and nailed with four-penny tin nails. Bed slates in the best elastic oil cement for last two courses at ridge.] The copper roofs to be 16 oz.

(*b*) All flashing of chimneys, projecting stone-courses, ventilator curbs, valleys, battlements, walls, coping, etc., or other rising parts and covering of crickets, scuttle, ridges, and molded capping, to be of 16 oz. copper. Cover top of brick wall under coping stone with ⅛ in. sheet lead, as shown on ¾ in. scale drawings.

(*c*) Provide and set where shown, skylights of 16 oz. copper; the same to be constructed in the most workmanlike manner, and to be of construction approved by the architect, to be furnished with condensation gutters and ventilators, and to be glazed with best quality wire glass.

(*d*) Furnish and set ventilator of approved make, where shown, all as per detail, of 18 oz. copper on wrought-iron frame.

(*e*) Furnish and set cowls for vent ducts of 18 oz. copper on wrought-iron frames, all as per full-size detail.

(*f*) Make the whole roofing work perfectly tight, and keep it so for one year from date of acceptance of the building by the architect.

SECT. 20. CORNICES.—(*a*) Provide and set cornices of copper, all in accordance with detail drawings and directions. Furnish all structural iron and steel framework for the above work as may be later required by full-size details. Provide sleeves of 20 oz. copper where conductors pass through roof, strongly secured in place.

(*b*) Provide 16 oz. copper conductors where shown; the connection of same with sewer to be provided by the contractor for plumbing. Provide copper wire muzzles or strainers for each conductor outlet and fasten securely to the roof. Provide sleeves and cesspools in roof at conductor heads as indicated, all of 20 oz. copper, and connect with all conductors with lead goosenecks.

SECT. 21. METAL VENTS AND HEAT DUCTS AND REGISTERS.—Metal vents and heat ducts and registers will be provided and set by the contractor for heating and ventilation. (For ventilator on roof, see section 19.)

SECT. 22. CARPENTRY.—(*a*) The carpenter is to assist all other mechanics employed in building, including those employed upon plumbing, heating, ventilating, and electric work. He is to do all cutting, jobbing, furring, blocking, finishing, and setting of approved strips, etc., and provide all forms, centers, and lintels required by the architect.

(*b*) When required, provide cloth-covered screens, and fit properly to all window openings, including basement; also board up the entrances as directed, and provide suitable doors and hardware, locks, etc., and keep same in repair during the progress of the work.

(*c*) [Furnish all timbers, bolts, rods, hangers, joint bolts, anchor iron, dogs, etc., for floors and roofs as called for by drawings, as required by the building laws, and to make the work satisfactory to the architect. Frame, mortise, pin, raise, and fix in position the several floors and roofs, sizes to be as noted on drawings. Floor timbers to be anchored to walls and dogged together so as to form a continuous tie across the building everywhere.

(*d*) [Crown all floor timbers, ceiling joists, etc., ¾ in. where span exceeds 15 ft. and gage to an even width.

(*e*) [All the floor, ceiling, and roof timbers, girders, etc., are to be of the best quality straight-grained, seasoned Georgia pine, of full and square dimensions, and free from large or loose knots, shakes, wains, or sap.

(*f*) [The wall plates to be secured to brickwork by iron bolts every 6 ft., as shown on ¾ in. detail drawing.]

(*g*) [Cross-bridging where shown to be 2 by 3 in. stock thoroughly nailed together.]

SECT. 23. UNDER FLOORS.—(*a*) Lay on all fire-proof floors spruce boards ⅞ in. thick [or better, Georgia pine plank 2 ins. thick, dogged on to steel construction with wrought-iron dogs], thoroughly seasoned, mill-planed, well strained to joints, headings run by, double spiked on every bearing; floor boards to be free from large or loose knots, shakes, or sap, left perfect in every particular after other mechanics and ready to receive upper floor.

(*b*) Lay between upper and under floors heaviest Neponset building paper, breaking joint. [Lay between upper and under floors fire-proofing to be approved by architect.]

SECT. 24. ROOF PLANKING. — (*a*) Cover the roofs with 2 in. planed and matched, thoroughly seasoned Georgia pine plank, free from loose knots or shakes, well set up [and strongly spiked to rafters], and dogged with wrought-iron dogs on to steel construction.

(*b*) Fur for metal cornice, and prepare the roof for roofing, to the satisfaction of the architect.

SECT. 25. STUDDING AND FURRING. — (*a*) Partitions, where not shown as brick, are to be of steel channels, furnished and set by plasterer.

(*b*) Furnish and set 3 by 3 in. pine studding around all door or sash openings in channel-iron partitions.

(*c*) Furnish approved beveled screeds of chestnut, to be bedded into concrete floors, and also in pitch roofs.

(*d*) Furnish wood bricks for mason to build into walls to give nailings for furring, etc.

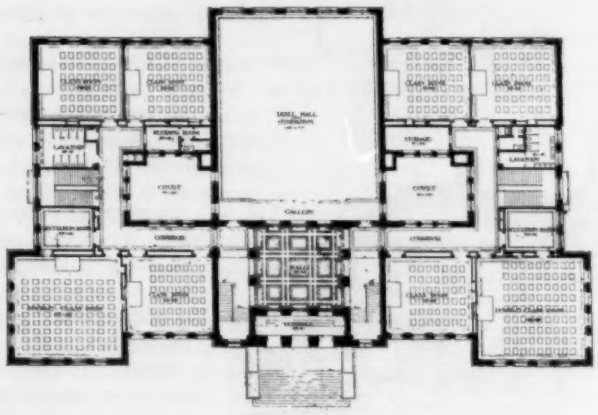
(*e*) Put on all grounds, angle, or corner beads for receiving the plastering throughout the building. Grounds to take plastering properly as directed.

SECT. 26. WINDOW FRAMES AND SASH. — (*a*) Make frames for windows, as shown by elevations and detail sheet, as per details, of pine. Inside to be veneered to compare with the finish of the several rooms. Pulley stiles, parting, and stop beads of hard pine. Stiles are to be fitted with bronze-face 2 in. steel axle pulleys. Sills of 2½ in. pine plank are to be thoroughly seasoned and free from knots, sap, or shakes.

(*b*) All exterior or interior single sash windows or transoms are to have rebated pine plank frames of well-seasoned, clear stock, the exterior frames 2⅛ ins. thick; interior frames 2 in. stock. All to be put together in the best manner. Window frames are to be painted one coat by contractor before being set (see section 34), and are not to be set until just before plastering is begun.

(*c*) Construct double run sash 1¾ ins. thick, with muntins 1⅛ ins. wide, arranged for the number of lights indicated on drawings, of best quality, thoroughly kiln-dried pine stock, molded, tenoned, glued, put together, and pinned in best manner, hung with best linen sash cord and round cast-iron weights to accurately balance sash when glazed; sash to be stained one coat. Exterior single sash and transoms to be the same as above. Interior transom and other sash to be of ash.

SECT. 27. DOOR FRAMES AND DOORS. — (*a*) All entrance door frames to be of first quality white pine plank, and securely fastened to masonry with iron dogs. All interior door frames to be of well-seasoned pine plank; all except those for closet doors to have transoms over them, which are to be veneered, where required, to conform with the finish of the several rooms; all as per detail drawings.



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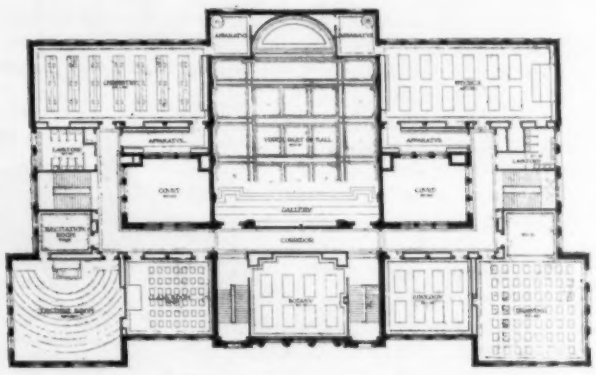

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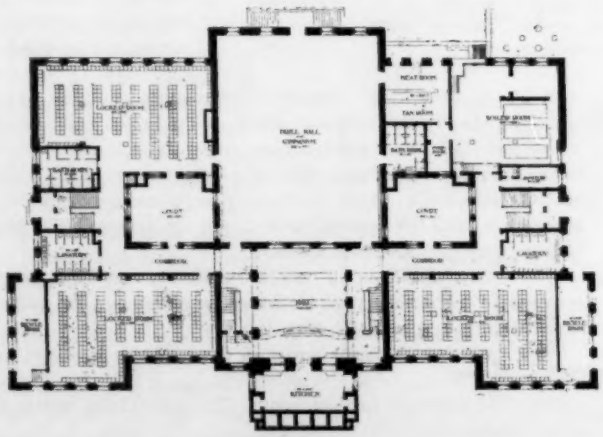
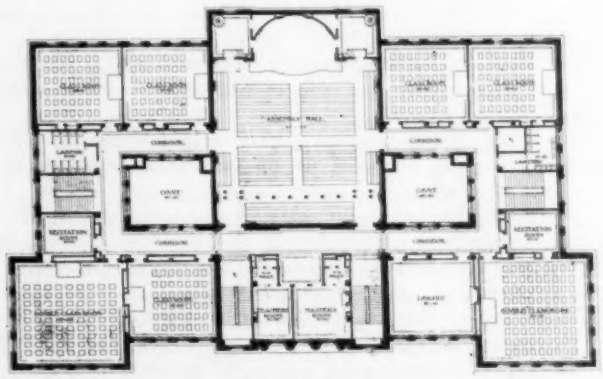


BASEMENT.



SECOND FLOOR.

SOUTH BOSTON HIGH SCHOOL, SOUTH BOSTON, MASS.

(*b*) All interior doors to be custom made, of thoroughly kiln-dried, first quality pine stock, veneered with properly selected brown ash, or oak, corresponding with the finish of the several rooms, flush-molded, mortised, tenoned, wedged, glued, and put together in the best manner; all as per scale and detail drawings, and all to have transoms, except closet and water-closet doors.

(*c*) Outside doors 2¼ ins. thick of white pine; interior doors 1¾ ins. thick, except those for water-closets, which will be 1¼ ins. thick.

(*d*) Inside doors are to have ⅞ in. thick best quality, rift

Pensacola hard pine thresholds, beveled on both edges, where not otherwise provided.

(*e*) All doors, except for toilet rooms and closets, to have one panel glazed with first quality double thick German glass.

SECT. 28. INSIDE FINISH.—(*a*) The inside finish, except as otherwise specified, is to be of first quality kiln-dried brown ash, of even color, all sandpapered off with the grain, and according to detail drawings.

(*b*) Provide a base around all rooms, corridors, closets, etc., of molded brown ash, as per ¾ in. detail drawing and full-size drawing, to be seen in estimating room, and also molded plinth blocks for all doors, using turned corners at all angles and jambs.

(*c*) Trim around all registers with molded ash.

(*d*) The office and library to be finished in first quality quartered oak, with cornice, boxed beams, and paneled ceilings, and with door and window trims of oak.

(*e*) Provide and set chair rail throughout all rooms with plastered walls.

(*f*) Provide and set 1¾ in. picture molding to run between the windows, of wood, to correspond with other finish, and in all school and recitation rooms.

SECT. 29. UPPER FLOORS.—(*a*) Upper floor boards throughout, except as otherwise specified, to be of the best quality rift Pensacola hard pine, not over 4 ins. wide, matched and blind nailed, planed to an even thickness, ⅞ in., all thoroughly kiln-dried, well strained, all heading joints run by and cut plumb and square (over a bearing in every case).

(*b*) Upper flooring in library and office to be quartered oak; to be ⅞ in. thick, not over 3 ins. wide, matched, and blind nailed.

(*c*) All the upper floors are to be planed and traversed and scraped to a uniform surface without ridges, etc., for first-class work. This work is to be done the last thing after painter has completed his work on the standing finish.

GIBSON DISTRICT GRAMMAR SCHOOL, BOSTON, MASS.
Edmund M. Wheelwright, City Architect.

SECT. 30. MISCELLANEOUS CARPENTRY.—(*a*) Provide movable teachers' platforms and fit up the toilet rooms, water-closets, bowls, etc., as shown on plans as directed.

(*b*) Put up two shelves of seasoned pine in all closets, over hooks, as the architect shall direct.

(*c*) Supply and set shelving, drawers, etc., in chemical storage room, dark room, and apparatus room; the glazed partition to run from baseboard to ceiling and to have simple cornice.

(For glazing, see section 34.)

The shelving in these rooms is to run to ceiling.

(*d*) Supply and set frames and 2¾ in. chalk receivers for all blackboards.

(*e*) The contractor is to allow and pay the sum of [Blank] dollars for electric clock dials.

(*f*) The contractor is to allow and pay the sum of [Blank] dollars for bookcases and wainscoting in library and office.

(*g*) Allow and pay the sum of [Blank] dollars for tables and furnishings of physical and chemical laboratories in addition to those otherwise specified.

(*h*) [Supply and set 2¾ in. ash hand rail for all staircases.]

(*i*) Supply and set 2¾ in. ash wall rail on bronze brackets (see section 31) for all runs of staircases, except on landings.

SECT. 31. HARDWARE.—(*a*) Furnish and supply all hardware trimmings and fixtures throughout the building, to be of solid bronze metal unless otherwise specified.

(*b*) Outside entrance doors are to have vestibule locks. Provide suitable door checks, of a make to be approved by said architect. Provide door catches, of a pattern to be approved by said architect, for outside doors and 5½ by 5½ in. bronze metal butts, bronze metal knobs, and large escutcheon plates.

(*c*) Doors of physical and chemical laboratories and of office — are to have [Blank] lock, master-keyed.

(*d*) All other doors are to have [Blank] three-tumbler lock, and with the same master-key, with 5½ by 5½ in. bronze metal butts.

(*e*) Knobs to be of size and shape to be approved by architect, and are to have key-plate escutcheon.

(*f*) Sash-fasts, lifts, and flush-pulls are to be of approved make and of finish to match door trims.

(*g*) Provide Climax stop adjuster for all inside beads of sash.

(*h*) Transom sash are to be hinged and to have "Solid Grip" transom rods of bronzed iron.

(*i*) Provide two rows of bronze hooks for all closets.

(*j*) Provide brass rubber-tipped door stops for all doors in building.

(*k*) Provide bronze rail brackets for wall rails of staircases.

(*l*) Provide all other hardware not specially mentioned, bolts, latches, scuttle fixtures, etc., as required or directed to complete the job.

SECT. 32. GAS-PIPING.—Pipe for gas outlets as shown on plans in the best manner; all to be done in accordance with the regulations of the gas company, connecting with street supply, making meter connections, paying all charges, making whole complete; all outlets to be capped.

SECT. 33. LATHING AND PLASTERING.—(*a*) The ceilings throughout addition are to be plastered directly on floor construction, and plastered ceilings where furred down [or where wooden floor construction is used] are to be lathed with No. 19 stiffened wire or "B" expanded metal lathing, securely fastened to metal furring strips [where wooden floor construction is used, the same is to be furred for ceilings with beveled Georgia pine strips], in best manner.

(*b*) Wire-lath across all iron beams, lintels, vent ducts, or other openings in brick walls that are plastered directly on the brick, as required to make a thorough first-class job.

(*c*) Wire-lath as above across all channel-irons in minor partitions.

(*d*) All furring is to be of iron. [This is only applicable to fireproof construction.]

(*e*) Minor partitions are to be constructed of studs of ¾ by ⅜ in. channel-iron, set 16 ins. on centers, fastened securely with staples or nails at top and bottom, and set true and straight.

(*f*) Attach "B" expanded metal or No. 20 galvanized Clinton wire-lath to front side of studs with No. 18 annealed wire; allow ¾ in. for grounds over face of lath on front of partition, and ¾ in. over studs on back of partition, unless otherwise directed by the architect.

(*g*) The channel-iron studs are to be securely fastened at top and bottom to cross pieces of 1 in. channel-iron. Channels at all openings to run to floor.

(*h*) Grounds for doors and windows are to be set in position by carpenter before iron studs are set.

(*i*) These partitions are to be rodded true and straight, and be plastered with King's Windsor cement, or Adamant, or Higginson's Prepared Mortar, flush with grounds on both sides of partitions, and when finished to be 2 ins. thick; the iron framework to be braced with temporary wood bracing from the back of the partition to the floor; this bracing to be set by plastering contractor, furnishing iron and lath, and is to be removed by plastering contractor after the face of partition has been plastered, and plaster has set sufficiently hard to hold partition straight and true.

(*j*) Wire on and securely fasten all necessary grounds and clamps for plumber's pipes, and for gas pipes and electric wire tubes, and for light fixtures.

(*k*) Furnish and set 1½ by 2 in. T iron frames for all doors in minor partitions.

(*l*) All plastering to be the best three-coat work.

(*m*) Plaster all walls throughout and ceilings, including basement ceiling, with same cement or mortar that is used on channel-iron partitions, lathed surfaces throughout, and all brick walls, where not otherwise specified or noted on plans. All to have grounds of proper thickness as directed by the architect.

(*n*) Brick walls to be plastered directly on the brick. Mortar to be well keyed and hand floated.

(*o*) Skim-coat plaster work, all to a true and even surface; angles and arrises to be quarter-circle throughout both walls and ceilings, except in library and office.

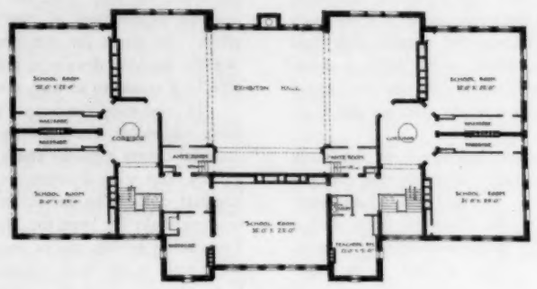
(*p*) Plasterer to provide and set all fire-stops required by the building laws, protect all weight-bearing metal with plaster and wire lath as directed.

(*q*) Run beads of English Keene's cement on Portland cement backing, for all doors and window trims and jambs in plastered rooms, except in library and office.

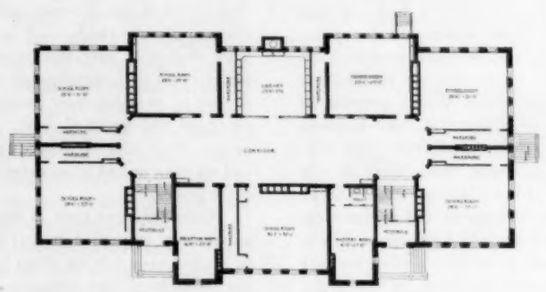
(*r*) Allow and pay the sum of [Blank] dollars for blackboard surface, this price to include the setting of same.

(*s*) Do any required patching at completion of the building and leave the entire plastering work clean and whole.

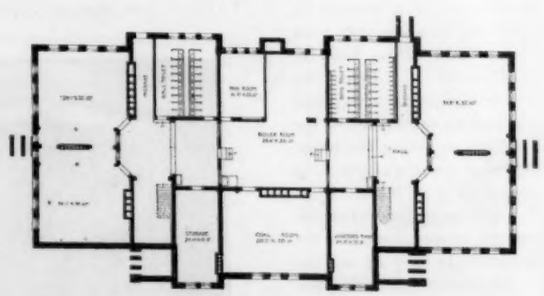
(*t*) Clear away all plasterer's rubbish.



SECOND FLOOR.



FIRST FLOOR.



BASEMENT.

GIBSON DISTRICT GRAMMAR SCHOOL, BOSTON, MASS.

SECT. 34. PAINTING AND GLAZING.—(*a*) Thoroughly putty-stop and sandpaper all woodwork.

(*b*) Paint all exterior woodwork four coats of best lead and oil, the priming coat to be put on immediately after the work is in place.

(*c*) Paint with three coats of lead and oil, heating and vent flues opposite all register openings.

(*d*) Paint ironwork and all metal work four coats of [Blank] metal paint, in addition to the paint previously specified for the same; colors and finish to be selected by the architect.

(*e*) Paint with four coats of best lead and oil, in colors to be selected, all exposed brickwork of basement.

(*f*) All oil used to be linseed oil from best Calcutta seed; lead to be ["Blank"] or ["Blank] Lead Works" best lead. Samples of the above are to be submitted for testing, and all paints are to be mixed at the building.

(*g*) Paint window frames and sills all over, except hard pine, before they are delivered at the building.

(*h*) Give parting and stop beads of windows one coat of oil and two coats of hard-oil finish. Grease pulley stiles with "beef's cod."

(*i*) All other finish, except where otherwise specified, is to be well filled and rubbed and is to have four coats of shellac, rubbed with pumice and oil to dead finish. All work about water-closets to have two coats of hard-oil finish with high gloss.

(*j*) Mahogany stain inside of all exterior sash, and finish with one coat of shellac and two coats of hard-oil finish.

(*k*) Finish all oak floors with coat of shellac and two coats of Butcher's Boston Polish in the best manner. Hard pine floors are not to have painter's finish.

(*l*) Paint all plastering to height of 7 ft. 6 ins. above the floor and all Keene's cement work four coats of lead and oil. Tint the walls above this height and all ceilings above basement with water color.

(*m*) All colors to be given by the architect.

(*n*) Glaze throughout with first quality, double thick German or Berkshire glass, well bedded, tinned, and puttied. The sashes must not be put in before the putty has hardened thoroughly. The basement windows, ceiling lights, toilet-room doors, and wherever marked are to be glazed with fine ribbed glass.

(*o*) Glaze with German glass as above the interior doors.

(*p*) The entire work is to be left whole, clean, and complete.

THE effect of frost, which tends to disintegrate bricks and stone, can be determined by a very simple test; namely, by direct freezing, says the *British Brickbuilder*. Let typical samples of the goods be chosen during frosty weather, and saturated with water, and then alternately frozen and thawed a dozen times or more. Now, if the samples to be tested are weighed dry, and the loss of weight by exfoliation determined also on the dry samples, the thing is accomplished. It would be possible to create a standard of permanency by counting a given percentage of loss as unity (this would have to be chosen arbitrarily) and then referring other percentages of loss to it. Thus might be created a scale of permanency, and when about to enter into a contract this might be referred to just in the same way as the resistance to crushing strain is now quoted.

Terra-Cotta Balustrading.

BY THOMAS CUSACK.

IN further elucidation of this subject, we give at Fig. 67 one section of parapet balustrading, which, whether by accident or good intention, proved well within the capabilities of the material in which it was made. This is due to the harmonious relationship of the members, also to the nice ratio of voids and solids obtained in fixing the size of these members. In this way a uniform shrinkage was secured, equalizing the strain during that critical process. The piece before us is 2 ft. 6 ins. by 3 ft., and but 4 ins. in thickness. There was no difficulty experienced in the execution of a score such pieces, and the size might have been increased considerably (had that been necessary) without incurring serious risk. With a thickness of 6 ins., single pieces such as this would be quite practicable up to, say, 3 by 4 ft.; even at that size, we doubt whether the limit would be reached.

At Fig. 68 we have a piece of balcony balustrade of the same general character. It is set up temporarily in connection with the dies and capping the better to illustrate both design and construction. In trueness of line, as in other points of mechanical excellence, this work will bear comparison with the best cut stone. As for price, where two or more such balconies are required, it ceases to be a question of comparison, and becomes one of contrast. We commend these facts to the consideration alike of those who seek adequate returns on a given investment, and to those entrusted with the beneficial expenditure of that which belongs to others.

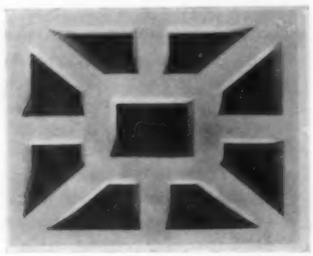


FIG. 67.

The balcony and parapet balustrading to which attention has been directed in THE BRICKBUILDER for September, as also in the foregoing illustrations, are all associated with classic, or with some phase of Renaissance architecture. For the remaining example in that class of work, a distinct type of Gothic has been selected; from which it will be seen that pierced curvilinear forms, however elaborate, are well within the capabilites of burned clay. Indeed, we may go farther and say that, in comparison with stone, the advantages in favor of the plastic material will be found in proportion to the intricacy of the design. This becomes obvious on taking the actual value of the stone in the rough, adding to it the cost of punching out the voids through a thickness varying from 4 to 8 ins. Thus far we get the subject in outline only. An expert stone-cutter has yet to mold all the members, to quirk out the intersections, and cut a variety of cinctures before it is complete. In figuring out the relative cost, it will be well to remember that, in stone, all this is done by the persistent, laborious use of mallet and chisel; finally, that the man who handles these tools is — as indeed he ought to be — one of the highest paid mechanics employed in connection with building. Gothic tracery in stone is therefore a luxury, reserved for the few who can afford it. Executed in burned clay, it comes within the reach of all builders wise enough to seek an embodiment of the artistic with the utilitarian elements of architecture, therein to be obtained at reasonable cost. Here we have the sound democratic doctrine of Mill — "the greatest good of the greatest number" — fittingly perpetuated.

In the production of pierced work in terra-cotta, whether bounded by straight or curvilinear lines, the operations just referred to are reversed from the outset. Even to cutting the profile of a molding in zinc, the part that a stone-cutter throws away as useless is indispensable to the terra-cotta maker. Mounted on a wood backing, it becomes his templet, from which the same molding is run with but little effort in a semi-fluid and very mobile material. Advantage being taken of the quick setting and adhesive properties of plaster, an equally rapid system of manipulation has been evolved. In this the expert plaster worker is guided by well-defined rules of procedure, all of which have been suggested to him from time to time by the peculiar action of the material in which he works. Chief among these is the principle of casting, wherever possible, as distinguished from carving in the solid. Hence the plaster model, no less than the mold to be taken from it, assumes the desired shape during the *process* of setting, and before the mobile mass has solidified. It may, therefore, be said that the resulting molds represent the least possible expenditure of raw material, of time, and of mechanical effort. So much for the preliminary steps of procedure; which, like the working drawings, are but well-devised instruments of service, — a means to an end, not to be confounded with the end itself.

In producing the actual pieces of terra-cotta from these easily prepared molds, the conditions are not less favorable. The raw material covers a goodly share of the earth's surface. Its abundance, variety, and wide distribution make it available for all time at a nominal cost. The facility with which it can be pressed into shape is proverbial; for here, too, the process is strictly plastic throughout. From thirty to fifty pieces may be produced from each mold, without the aid of any tool whatever, beyond the use of a man's hands. It is a fact, worthy of more than passing notice, that work such as shown in the accompanying illustrations was *not* hammered out of rock by oft-repeated blows and knocks, "but molded in soft clay, that unresisting yields itself to the touch." The last dozen words show that this easy facility of execution appealed to the poetic imagination of Longfellow no less strongly than it does to the most prosaic of practical men, to whom "time is money." To the fully equipped and qualified architect it should have a twofold significance; for in him we expect to find these qualities of temperament and training united to an extent unlooked for in the members of any other profession.

Considerations such as these, however, do not always occur to an architect engrossed, it may be, in the early stages of his project, or in time to enable his client to profit by their acceptance. When the question of cost comes up, as sooner or later it is likely to do, the man who is expected to foot the bills may have something to say. To him it then becomes a question as to whether he will pay for

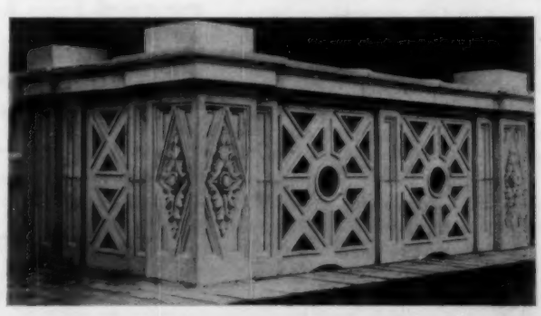


FIG. 68.

these embellishments in stone, or, perhaps, abandon them altogether. If, at this juncture, he be not guided aright through intervening doubts and difficulties by his professional adviser, a still worse fate is in store for him. He may, in a moment of weakness, rushing to the opposite extreme, perpetrate a sham in sheet metal for which he will afterwards hold his architect primarily responsible.

In the interest alike of architect and owner, we propose to show that features such as these can be executed in a material more enduring than stone, and at a comparatively low cost. These fundamental facts are becoming known to our leading architects, and, which is

more to the point, are being put to the test with results that must, in the nature of things, create an ever-increasing demand in quarters where it did not formerly exist. While enlarging upon the duties and responsibilities of architects, it must not be forgotten that those resting upon the manufacturers are not less urgent and exacting. They were outlined somewhat freely by the present writer in the first of these papers (BRICKBUILDER, May, 1895), in words that have not lost their original meaning because of anything that has happened since they were written. We shall take the liberty of reprinting them without transposition or abbreviation.[1]

FIG. 70.

In this connection, we would call special attention to Figs. 69 and 70; one showing the construction, the other a view of three pieces of Gothic balustrading, set together to illustrate the preceding diagram. It will be seen that the shaft by which these two alternating designs are, apparently, separated is made to lap in such way as to unite them, at the same time rendering the one and only joint practically invisible. In short sections the diagonal stays would not be needed; but as this was one of considerable length, they were added as a safeguard against lateral vibration. The spacing of these sections was, of course, fixed arbitrarily by the design, but the jointing and general construction were entrusted to the terra-cotta manufacturer. They might — by some makers would — have been subdivided into an aggregation of small pieces, on the erroneous supposition that this would mean less risk and less responsibility. That notion, originating in the unfortunate experience of some who are no longer engaged in the business, is far too prevalent, and though the originator may have passed from the scene of activity, the impressions so created survive with characteristic perversity. Misinformation of this kind has given rise to needless misconception on the part of architects, and is still highly prejudicial to the use of terra-cotta in general. It has been truly said that "time makes more converts than reason"; yet we have hastened to correct some of these false impressions, and shall continue to do so as opportunity permits, trusting to time for much that we must necessarily fail to accomplish. A learned writer has justly remarked that, "He only can rightly guide others in the paths of knowledge, he only can know whether his predecessors went right or wrong, who is capable of a judgment independent of theirs."

We know that "a long habit of not thinking a thing wrong gives it a superficial appearance of being right"; therefore, a few facts bearing upon the present example may help to remove the débris of some antiquated and exploded notions to which far too much credence has been given. In dealing with it, it will be seen that an opinion, altogether at variance with that indicated in the preceding paragraph, prevailed as to jointing from the outset. This work was made in *single pieces*, not because the architects had made any stipulation in that direction, nor yet as an empiric test of an abstract theory, but voluntarily, advisedly, and by preference. First: Because it is incomparably better to have it in that way, not only on the score of appearance, but also on the grounds of simplicity in setting and because of its greater stability once it has been set. Second: We are prepared to affirm that it will cost less, when made in the way indicated, than it would if jointed into smaller pieces. Third: Rational methods being adopted, the risks attending the manufacture of reasonably large pieces are reduced to a minimum — we might almost say a minus quantity. While these facts are sufficiently conclusive, it may be added that beyond the exact number of pieces called for, it was not considered necessary to make an "over"; nor was one required. As in larger blocks, previously described, these came from the kiln without a flaw. With hundreds of successful examples in reserve, we invite the attention of architects and owners to what has been said on behalf of advance practise, in which the bugbears of other days have become obsolete.

A pertinent observation left on record by Bacon occurs to us at this point, — one that is capable of a wider application than its author intended: "The amount of ill-written literature is not diminished by ceasing to write, but by writing others, which, like Aaron's serpent, shall swallow up the spurious." So, too, the amount of ill-constructed and poorly made terra-cotta is not improved by allowing men who are notoriously blind to constitute themselves leaders of the blind, but by producing work the superior excellence of which will force them to seek a less hurtful way of obtaining a livelihood.

From pierced double-faced balustrading to geometrical tracery is but a step, and the transition in such a case naturally suggests itself. What is practicable in the one is equally so in the other, for the prevailing conditions are identical. Nearly all that has been said in reference to the former will hold good in the latter case, and, so far as it goes, may now be emphasized without being repeated. There may be an opportunity during the coming year in which to say something on church architecture in materials of clay. In that case, a more extensive use of terra-cotta tracery will be urged in the light of accompanying illustrations; none of them formulated in support of new-fangled theories, but all taken from recently executed work, or from that which is entitled to yet greater respect, because of its survival in the face of time and the elements.

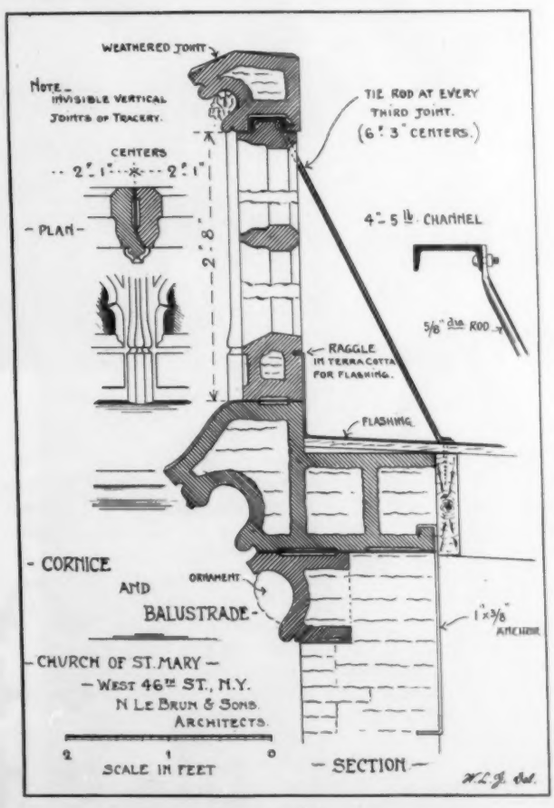
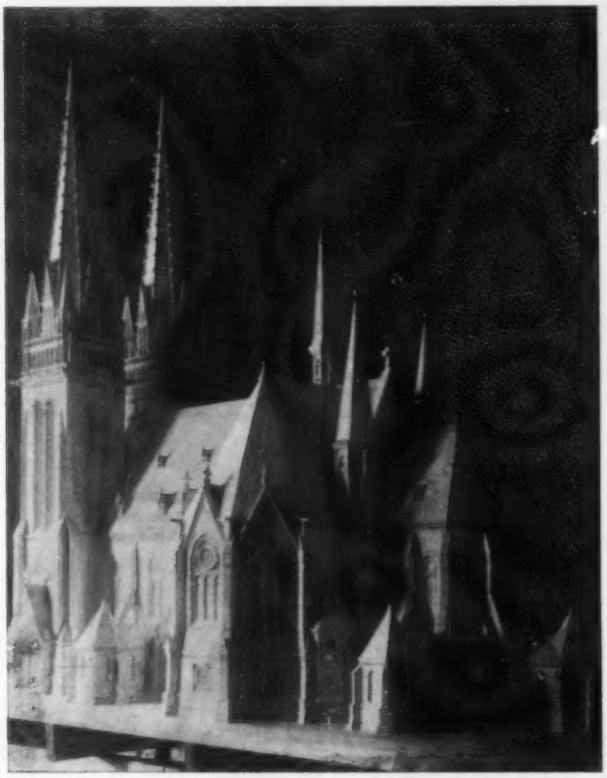


FIG. 69.

[1] Badly made terra-cotta is bad for everybody, irrespective of who bears the odium of being its godfather. By the same rule, a well-done job is a universal benefit, no matter who may be entitled to the credit of having stood sponsor for it. The better the work, the more will it be used and the wider will be the advantages that accrue. Thus does the question become one of public concern. Its enemies are of its own household. It lies with the manufacturers of terra-cotta themselves, more than with any other part of the community, to hasten or retard its manifest destiny as the popular building material of the future.

An Example of Fire-proof Church Architecture.

TO THE PUBLISHERS OF THE BRICKBUILDER: — I have experienced much gratification in having found in my own city a building in course of erection in which fire-proof material is being used in the main structure of a work of art, without in any way violating the traditional usages of the greatest period of historical



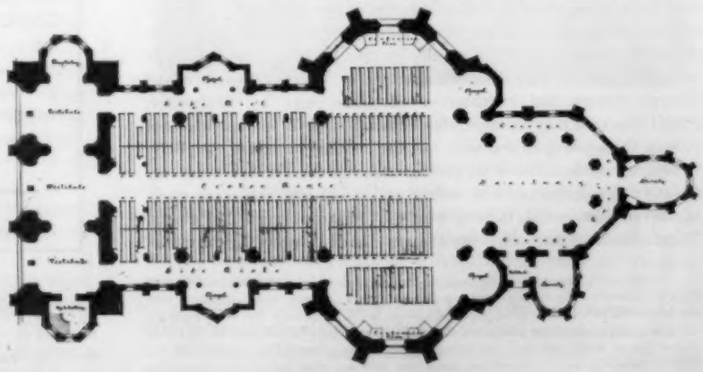
ST. PAUL'S CHURCH, CHICAGO.
From Plaster Model.

architecture. It must be confessed that in many respects the discussion of the problem, how to make buildings fire-proof, has little in it to satisfy esthetic aspirations, and unless it can point the way to a realization of that which will satisfy the eye as well as utilitarian needs, it soon becomes a dull subject as well to the average reader as to the writer. But when a fire-proof material becomes the essential part of a beautiful building, fire-proofing may well be recognized as a fine art as well as a science. It was with these thoughts that I first beheld the new St. Paul's (R. C.) Church, now about half completed, and concluded that it was destined to be the beginning of a fire-proof architecture in every sense of the term, and consequently an object of interest to the readers of THE BRICKBUILDER.

This church is located on the southwest corner of Hoyne Avenue and 22d Place, in a quarter west of the lumber district mainly inhabited by a poor but industrious class of mechanics of German birth from the Rhine and Moselle provinces. The pastor of this flock is Rev. G. D. Heldmann, a native of Chicago. He was the founder of the parish. The architect and master of all the work is Henry J. Schlacks, also a native of Chicago, and now in his thirty-first year.

This church has reached the full height of the main walls, and the steel framework of the roof is in course of erection. It is designed and built according to the distinctive characteristics of thirteenth-century church architecture, and the material, wherever possible to use clay products, is *brick*, both outside and inside; whether for walls, groined ceilings, roofing material, interior finish, terra-cotta ornamentation and tracery, or flooring: all is some product of clay. The only exceptions are a granite water table surrounding the whole building (for it is a finished work on all sides), I-beams and concrete arches for the floor, small granite shafts with capitals and bases between the main vaulting piers, and a steel structure to support the tiled roof. There will be no wood, and consequently nothing to burn in the structure or finish, and all the seats and furniture will be movable. The doors will probably be of bronze, while the windows, the designs for which are yet to be decided upon, will be the best product of American artists in stained glass, set into the grooves of the terra-cotta tracery. It is only to be added that the pressed brick of the exterior and interior, most of which is molded (the same forming all the ribs and groins of the vaulted ceiling), is all fire brick, at which point my description of the fire-proof qualities of this edifice ends, and as such it is as nearly perfect as possible.

Other interesting facts will be given in the words of the architect, which I have solicited, as follows: "In December, 1896, Father Heldmann came to me and said he wanted to build a new church during the year 1897. We discussed the needs of the parish, and he asked me to make preliminary studies, which I did along conventional lines, occupying about three weeks, but not to my own satisfaction. We then discussed the possibility of building a church which would appeal to the affections of the people of the congregation by presenting something similar to those churches they had seen in the old country. They had mostly come from the valley of the Moselle, where the churches, which I had fortunately seen, had rough interiors, never intended to be plastered. At first we decided to build a church similar to the Cathedral of Treves, but on account of the great cost of finishing the interior with stone, the idea of building the whole, inside and outside, of brick was suggested by me. A brick interior was a novelty to Father Heldmann, though I knew they were doing it in Germany, and remembered particularly the success of this kind of building by Prof. Johannes Otzen, of Berlin. I therefore decided at that early stage of the program to follow in his footsteps. I also decided if possible to have the building vaulted with brick, which I believe has not been heretofore done with church edifices in this country. Of course, the scheme was to avoid all necessity for plastering, and this made it still more difficult. The plan was then settled upon, that is: that the church should be cruciform in shape, with very narrow



FLOOR PLAN.

aisles, to be used only for passage and processionals, leaving the nave unobstructed, and an ambulatory around the sanctuary. It was to have a large vestibule (narthex) vaulted, with organ loft, but no other galleries, two side chapels on the aisles, and two sacristies,

VIEW FROM THE NORTHEAST (OCTOBER, 1898), ST. PAUL'S CHURCH, CHICAGO.

the second one being behind the sanctuary, to connect with the cloister and pastor's house, to be hereafter erected, and a baptistry connected with the vestibule. When the scheme of brick construction for the interior was practically and satisfactorily settled, the exterior presented a very difficult problem, that of combining the two towers and the auxiliary chapels that Father Heldmann wanted, with the style of architecture we had chosen for the interior. But I found my motive for the towers in the Cathedral of St. Cortin, at Quimper, France, which I had always greatly admired. I hold that an architect should always go to examples of a perfected style and work upward, if possible, from them, and not trust too much to his own invention, and I think that in this opinion I am upheld by the best men in the profession. By so doing we are following in the footsteps of the best precedents we have. All the best architecture of the Middle Ages was evolutionary; everything was a slight improvement on something that had preceded it.

"We then determined to erect the building without the intervention of contractors."

"Why did you conclude to adopt that method?" I asked.

"Because we could find no builder in Chicago acquainted with the proposed method of construction, or who could give even an approximate estimate of the cost from my plans. At a meeting of the building committee, when these obstacles to a successful carrying out of the plans were discussed, the committee voiced the sentiments of Father Heldmann, expressive of his confidence in the architect, by deciding to let him carry out the work in his own way. There are many members of the congregation skilled in the different building trades, and this, together with the fact that at that time there was a general dulness in the building market, induced me to decide that, as far as possible, the parish should supply all the labor at current rates of wages, so that in many cases what a man contributed might come back to him. This has been done, and with great success. It has aroused an interest and enthusiasm in the parish that would not otherwise have existed. As for the materials, we contract for them or buy them in the open market.

"I was given all the necessary time to prepare the plans, being not otherwise engaged at that time, and before the foundations were designed I had borings made on the site. These resulted in the surprising fact that there was rock under the church at a depth of only twenty feet below the street grade. I then decided to carry all the main piers and buttresses down to the rock, the intermediate walls being carried on arches. I also became confident that I could successfully build the whole church with a vaulted ceiling, as I would have no fear of settlement. As a result, we have had no anxiety whenever we wanted to change the loads. The pier foundation, however deeper it may be than if it had been on clay, was much less expensive.

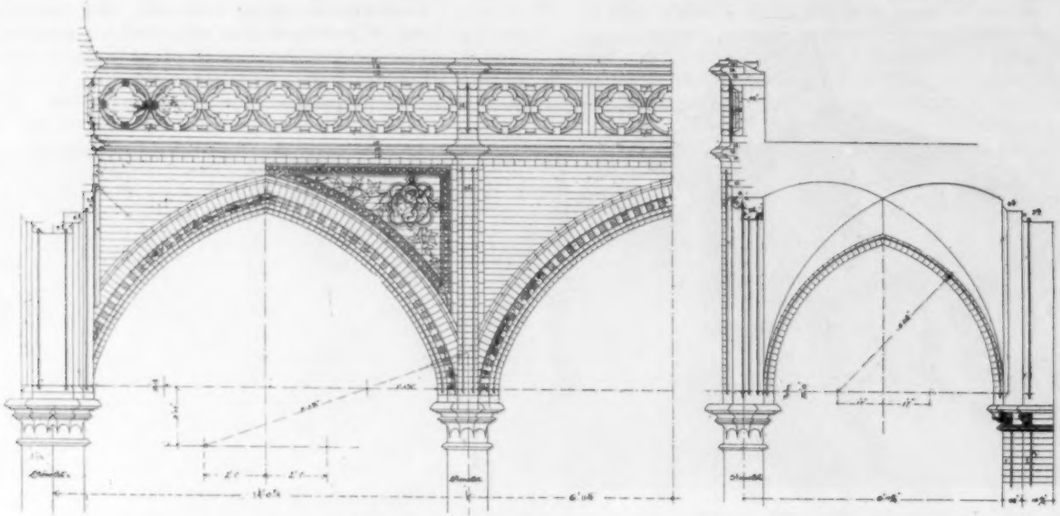
"My principal drawings were completed during the winter of 1896 and 1897, and we were able to commence the work in May, 1897. At that time I was fortunate in being able to procure the services of Mr. Paul F. P. Mueller, as superintendent of construction, his connection with a building company having been broken off very suddenly. He has since had entire charge of the work on the building as my assistant, purchasing material and employing men, for which his previous education in the best building school in Europe, no less than his large experience in this country, has fitted him."

Mr. Schlacks gave many more interesting particulars of his experience, too extensive to be here repeated.

I have also had a very interesting conversation with Father Heldmann, which I wish you had space enough to print in full, for it would be an admirable lecture, not only to architects, but to clergymen of his church. So I will give only its general tenor. He said he had always been dissatisfied with the meretricious ways in which Catholic churches had been built, and had made up his mind that if he ever built a church, it would be worthy to be called "the house of God," and should be an honest creation. His observation of what others had done had led him to learn what to avoid, but he had never had an opportunity to go to Europe and study either the perfected cathedrals of the Middle Ages or some of the modern churches he had heard of. He had, however, been reminded by Mr. Schlacks of the successful work of Professor Otzen, in Berlin, which made

INTERIOR, LOOKING TOWARD ORGAN LOFT (OCTOBER, 1898), ST. PAUL'S CHURCH, CHICAGO.

him think that he might be able to do as well. When he had accumulated sufficient funds to make a beginning, he and Mr. Schlacks had made a journey through most of the large cities of the United States, East and West, to see what others had done. They visited hundreds of churches, not confining themselves to those of the Catholic denomination, and he was struck with the contrast between some of the churches of the Episcopal denomination and those of the Catholic. He said there was a sincerity of purpose in the Episcopal churches, and a truly religious character in their architecture, materials, and construction, that he had failed to see in the American churches of his own faith. This is not different from the opinions held by many thoughtful architects. He was struck, not only by the unsubstantiality of modern churches, but their liability to be destroyed by fire. He had always had a dread of fire since the great event of 1871 in Chicago, which made a strong impression upon him in youth, and thought that the way churches were generally built betrayed a great negligence in dealing with sacred things. To combat this, and at the same time secure economy of cost, a course which has since been justified by results, it was decided that the new church should be of brick, outside and inside, so far as possible.

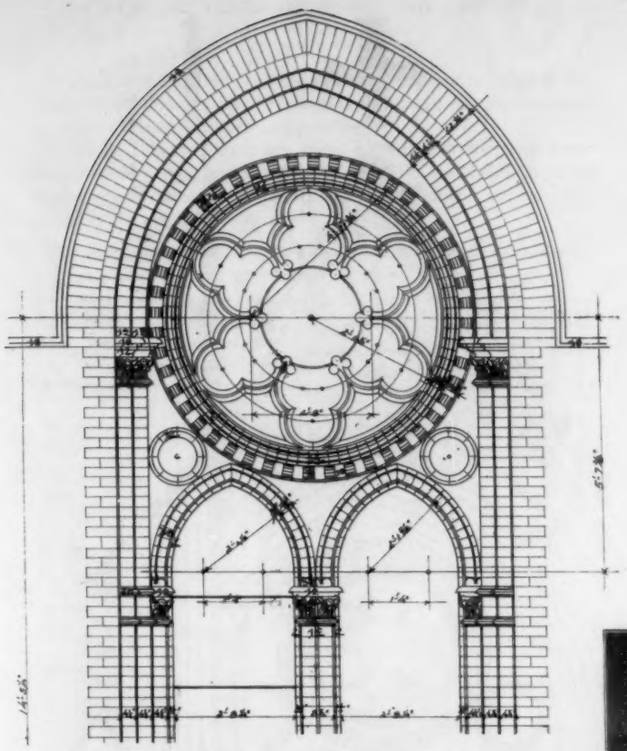


DETAIL OF ARCADE BELOW ORGAN GALLERY, ST. PAUL'S CHURCH, CHICAGO.

INTERIOR OF ST. PAUL'S CHURCH, CHICAGO, LOOKING TOWARD ORGAN LOFT.
From Water Color.

The rest he left to Mr. Schlacks, in whom he had found an echo of all his longings and desires. It was in seeking the best color of brick to satisfy the eye that they had chosen a rich buff fire brick, which proved to be the cheapest that could be found to fulfil all the requirements, such as color, fire-resisting qualities, and the necessity of being made in a great variety of shapes, so that it could form continuous moldings. He hoped that his new church would not only be an educator for his own people, but would become an object lesson to all who might come after him. He could not speak too highly of Mr. Schlacks, who has devoted nearly his whole invaluable time to the work, and who was in entire sympathy with him in his aspirations.

A few statistics will be necessary to make this description complete. The outside dimensions are as follows: width over towers, 76 ft. 4 ins.; width over transept, 103



DETAIL, WINDOW OF NAVE, ST. PAUL'S CHURCH, CHICAGO.

ft.; length, 183 ft.; length, including sacristy, 203 ft. The heights are: from floor to under side of nave vaulting, 65 ft.; from floor to under side of transept vaulting at center, 73 ft.; sanctuary vaulting, 58 ft. The interior dimensions are: width of nave to axis of piers, 42 ft.; width, including aisles, 59 ft. 6 ins.; width at axis of transept, 93 ft. The height to ridge of roof outside is 100 ft.; the two towers are each to be 245 ft. high. A terrace 1 ft. 6 ins. high above the sidewalk surrounds the whole.

The pressed brick and molded brick are made by the Webster Brick Company, of Webster, Ohio. The plain faces of exterior walls are of common brick. When completed, the entire interior walls and piers will show Webster brick, of which also all transverse wall arches and groins of the ceilings will be made. The wide splay of the chancel arch, and a similar splay to the arch over the organ gallery, as well as all spandrels of arches and panels now shown on the walls as common, will be filled with glass pictorial mosaic on gold grounds. The vaulting cells forming the filling in of the groined vaulting are of three thicknesses of flat tiles set edge to edge. The first course forming the ceiling is of 6 by 6 by ¾ ins. nearly white porcelain tiles, with borders next to the vaulting ribs 6 ins. wide of encaustic tiles of the same size, in colors, so that the whole ceiling will be decorated. The two outer courses are of ¾ in. fire-clay tiles. The sculptured "eyes" in the vaulting and capitals of all colonnettes in the interior are of terra-cotta, made similar in color to the brick. All the vaulting is quadripartite and domical, thus avoiding all such *tours de force* of the medieval builders as have mystified some modern critics. All exterior terra-cotta, consisting of the window tracery, crockets, finials, copings, and crosses, are of similar terra-cotta, used, however, only where it has been impossible to use brick. Many of the pieces, especially for interior work, where subjected to great pressure, are cast and burned solid. All of this work is furnished by the Northwestern Terra-Cotta Company. The floor will be finished with encaustic tiles laid on the concrete arches. All exterior walls are hollow. There is a deep basement under the whole, which will be utilized by the heating and ventilating apparatus. This will, by regularly changing the air within the church, prevent all danger of sweating during the warm days of spring. The roof will be covered with Ludowici red tiles, made in Chicago, similar to those on the German Government Building at Jackson Park.

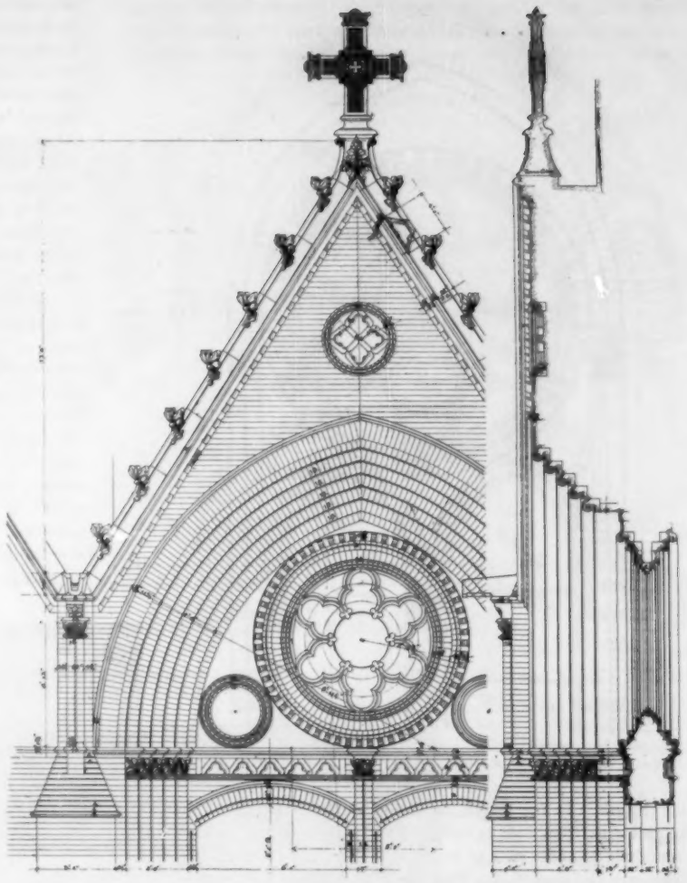
No metal or wood will enter into the construction of the twin spires. They will be built of brick, the walls being 12 and 8 ins. thick, and the crockets and crosses of terra-cotta.

In conclusion, let me say that the chief interest that attaches to this remarkable building is, not so much that it is an example of good architecture, truthful construction, and moreover thoroughly fire-proof, or not even because it is a wonderful example of construction with brick; it might not be either of these were it not for the fact that it is an architect's building and not a contractor's building. Or it might be said that it is a builder's building, and the builder was also the architect. It demonstrates that what was done in the twelfth, thirteenth, and fourteenth centuries can be done in the nineteenth, in the same way, and with the same results. The whole work is a labor of love from beginning to end. The modern commercial idea is entirely obliterated. What is more, it has proceeded far enough to demonstrate that this method is the most economical in

INTERIOR OF ST. PAUL'S CHURCH, CHICAGO, LOOKING TOWARD SANCTUARY.
From Water Color.

practise, and gives the largest results for the least cost. The wildest estimates have been made by outsiders of what it will cost. Those who are building it know now what this will be, but I will not attempt to repeat their figures. It does not concern the public.

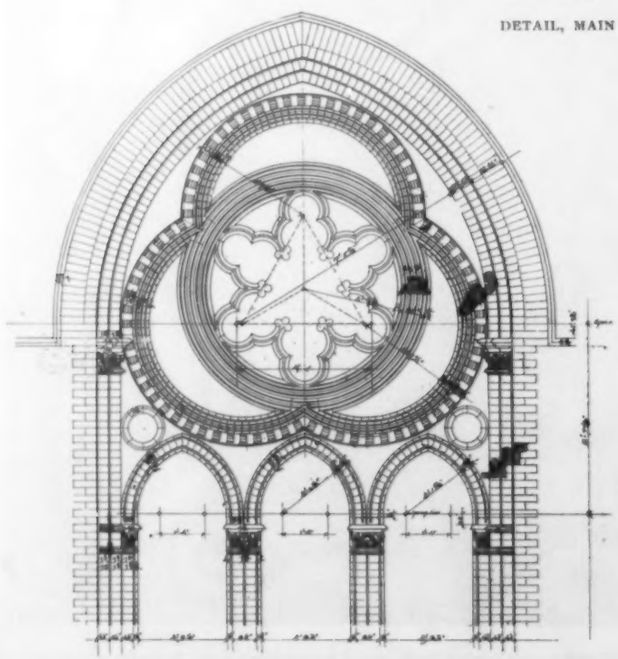
The illustrations that I have procured consist mainly of one exterior and one interior photograph of the work in its present condition. The latter shows the method of interior construction and the groined vaulting over the organ gallery completed. It also shows the wall arch above it of 40 ft. clear span standing free. Mr. Schlacks had this built to satisfy some of the congregation that he could do it with safety; and it has stood without any other support for a month past. Another view is from the plaster model showing the completed church from the northwest, but much of the detail has been changed since it was made. The method of building admits of improvements in the design being made as the work progresses without extra expense. There are two interior views from drawings showing the completed building; also photographs of one of the crosses for the front entrance and one finial. Besides these I send you a ground plan and some of the detail drawings of the brickwork that are well worthy of study on the part of those who are interested, especially in the construction of window tracery with terra-cotta. PETER B. WIGHT.



DETAIL, MAIN ENTRANCE, CENTER OPENING, ST. PAUL'S CHURCH, CHICAGO.

PRESERVING RECORDS OF FOUNDATIONS.

THERE are foundations and foundations, and though the average builder's foreman will be very ready to declare that earth that looks solid will hold, in an expressive phrase, all that you can put on it, every one who has studied foundations knows that the contrary is very often the case. We have seen bottom which had every appearance of being the hardest, firmest kind of dry, gravelly clay, but which upon investigation proved to be simply a thin layer of such clay over a relatively soft and yielding earth.



DETAIL, WINDOW OF TRANSEPT, ST. PAUL'S CHURCH, CHICAGO.

The practise ought to be rigidly adhered to of always sinking test pits before laying the foundations of a heavy building. It is a simple thing to have borings made to a depth of 20 or 30 ft. below the sidewalk, and there ought to be below the bottom foundation a layer of suitable bearing stratum at least 5 ft. thick, and of course the thicker the better. Furthermore, it is a wise precaution to not only have the borings made, but to reserve samples of the soil, and when the trenches are dug it is a good idea to have careful photographs taken from one or two points so as to show the character of the soil. This may prove very useful in case of subsequent additions or changes in the building, especially if such changes involve added loads. Also in large city buildings, when one structure is to be carried down below the adjoining cellars, it is well to take very careful photographs and measurements of the existing adjoining foundations, which are very often found not to be as secure as the neighbors imagined. These photographs, together with samples of the actual earth taken from several points about the building, would form valuable data to which the constructor could refer with perfect confidence.

PHYSICAL TESTS OF PORTLAND CEMENT.

BY CLIFFORD RICHARDSON.

As with the natural cements, we are accustomed to judge of the character of various kinds of Portland cement by certain physical tests as well as by their chemical composition.

In the following table are given the results of the physical examination of certain specimens which illustrate the various types of high-grade Portland cement now found in our market and recently tested in the author's laboratory.

PHYSICAL TESTS OF THE BEST BRANDS OF PORTLAND CEMENT OF VARIOUS ORIGIN.

Country. Brand.	German. Germania.	Danish. Aisen.	English. Brooks & Shoobridge	Belgian. High Grade.	American. High Grade	American. Ordinary.	American. Ordinary.
Residue on 100 mesh	25.9	31.0	23.0	23.0	14.0	23.6	6.8
" " 100 "	6.0	4.0	7.0	10.0	1.5	6.8	.8
" " 50 "	trace	trace	1.0	1.0	trace	.8	.2
Set, initial	3 hrs. 25′	3 hrs	1 hr. 45′	3 hrs.	4 hrs. 25′	2 hrs.	25′
" hard	7 hrs. 40′	7 hrs.	3 hrs. 15′	6 hrs.	6 hrs. 30′	4 hrs. 45′	1 hr.
Water for neat mortar	20%	20%	19%	20%	19%	19%	20%
" " sand "	10%	10%	9%	10%	9%	9%	9%
Tensile Strength:							
Neat, 1 day					376	260	350
7 days	656	560	596	626	840	456	790
28 "	687	666	464	638	974	678	
3 months					946	740	
Quartz, 3 parts:							
7 days	160	282	120	226	280	162	364
28 "	230	262	192	306	314	218	
3 months					494	244	
Crushing Strength:							
Neat, 7 days	5,458	6,056	4,725	5,091	10,280	5,500	4,950
28 "	6,695	6,761		7,256	11,822	7,412	4,400
3 months					13,250	5,787	
Quartz, 3 parts:							
7 days	1,659	1,321	634	1,601	1,762	1,042	2,137
28 "	1,700	2,157		2,142	2,990	1,712	2,500
3 months					2,923	2,100	

The results of the preceding tests show that the Portland cements are distinguished from the natural cements, in addition to differences in characteristics which have already been mentioned, by their slower set, except among some of the inferior brands, and their more rapid acquisition of strength, which is largely completed in from seven to twenty-eight days, although continuing to increase for a year or more. Mortars made with Portland cement are much denser and less porous than those of natural cement, due to the greater specific gravity of the cement itself and to the smaller volume of water required.

Amongst themselves the various brands of Portland cement differ very considerably, especially if the inferior Belgian, English, and American cements are included, and more so than would be expected where the limits of composition are so small. The best German Portland cement can, without doubt, be taken as the standard of what is most desirable. When such a cement is mixed with three parts of standard sand it yields a mortar which, according to the requirements of the Association of German Cement Manufacturers, should have a tensile strength of over 227 lbs. per square inch and a crushing strength of 2,275 lbs. per square inch in twenty-eight days, when preserved one day in air and twenty-seven in water of normal temperature. Generally much higher results are obtained in Germany, as may be seen from the results of a test of a sample of German Portland given by Professor Tetmajer, which are as follows:—

SAND MORTAR. 1 TO 3.

	Tensile.	Crushing.
7 days	318	2,824
28 "	398	4,082
3 months	434	4,228
7 "	443	5,004
1 year	605	5,429

Most of the German cements found in our markets fail to reach the high standard, especially of crushing strength, seen in this sample, but the best ones reach the limits which have been mentioned, while the highest grade American cements frequently exceed them, except in crushing strength. The lower results obtained here are very largely due to the differences in the methods of testing employed in the two countries, and not entirely to the nature of the cements themselves.

American cements in some cases have an excessively high tensile strength at early stages of the hardening process without increasing in strength after a few months, or even deteriorating after that time. This seems to be a peculiarity of the rotary furnace cements, while those burned in kilns are more like the similarly prepared German and Danish products, which gain their tensile strength more slowly, but continue to do so for a long time without reverting. It is plain, therefore, that a cement giving the highest results in tensile strength, especially in the neat form, at an early age, may not be the strongest in this respect after longer periods of time. It will be noticed, however, that the results obtained in tests of the same cement for crushing strength in the form of sand mortar may continue to increase when there is a decrease in the tensile strength and crushing strength in neat mortar after some time. The importance of long-time tests and of determinations of crushing as well as tensile strength are, therefore, apparent in judging of the character of any particular brand.

Our Portland cements are quite as well ground as those which we import, and often are much finer, in the best brands over 80 per cent. passing a sieve of two hundred meshes to the inch and from ninety-five to ninety-eight passing a one hundred mesh sieve. Considering the increased value of finely ground cement, this is an important consideration.

VOLUME CONSTANCY OR SOUNDNESS.

An important determination and consideration in judging a Portland cement is whether it is sound and will not change its volume on age and exposure, losing, at the same time, its strength and coherence. This is usually considered in making tests of cements. It appears from the results of our experiments that many second and third grade cements are not satisfactory in this respect, as some of them check and deteriorate under the conditions of the test. A good Portland cement should show no signs of deterioration in sand mortar even after considerable periods of time, and although it is impossible to always wait for long intervals to settle this point, there are forms of tests which can be so accelerated as to give a result from which more immediate conclusions may be drawn, and it is important that these tests be applied. The best brands, both of foreign and domestic cement, generally prove satisfactory in volume constancy, and when preserved in the form of pats with thin edges for a long time in water, or when the test is accelerated by heat, seldom show any signs of cracking or checking. As the supply of cement of such a quality is plentiful it seems undesirable to use any that will not pass the test, although it may prove unjust in a few instances if applied severely. The methods of making the tests we shall describe later.

EFFLORESCENCE on brickwork may, according to Professor Günther, of the University of Rostock, England, "come either from the bricks or from the mortar. While incrustations of calcium carbonate do no harm beyond spoiling the appearance of the work, soluble alkali salts repeatedly dissolve and recrystallize in the cracks, ultimately producing disintegration. To prevent these incrustations, pyrites and sulphates can either be removed by the slow process of seasoning the clay by prolonged exposure to the weather before making up into bricks, or by adding barium salts to the clay before burning, so as to produce the insoluble barium sulphate. Another remedy is the prevention, in continuous kilns, of the oxidation of the sulphur present in the clay or coal beyond the stage of sulphurous acid; which may be effected by limiting the air supply. Finally, the bricks should be very thoroughly burnt, since in this state they are less disposed to absorb the moisture necessary for the extraction of the soluble salts."— *Eng. Record.*

Masons' Department.

SOME MISTAKES OF CONTRACTORS AS VIEWED BY AN ARCHITECT.

BY F. E. KIDDER.

(Continued.)

THE writer is now supervising the completion of a building, the architect of which lost his health soon after work was commenced, and died when the building was about half completed. When the first bids were received they brought the price beyond the amount available, and the architect endeavored to reduce the cost by omitting some portions and changing the materials.

As the work has progressed much annoyance has arisen from the contractors claiming that they had certain verbal agreements with the architect which were not incorporated in the plans and specifications nor mentioned to the building committee. One subcontractor claims that to do the work according to the plans, specifications, and details will cost him three hundred dollars more than what he figured on doing. The writer, as superintendent, has only the plans and specifications to govern him, and, of course, the owners expect him to see that the work is executed in accordance with them.

Nothing having been said to the building committee about any of these changes, they naturally believe that none not shown on the plans were contemplated. Consequently, the contractor must comply with the drawings and specifications or forfeit his bond.

This is mentioned for the purpose of illustrating the importance of having everything in "black and white." It is true, a great deal of business is done on verbal contracts, and often without trouble, but it cannot be said to be a safe way of doing business, and, as a rule, is wholly unnecessary; even if the parties concerned are perfectly trustworthy, life is very uncertain, and death may bring about unexpected situations.

If the tracings, when handed to the contractor, are not in accord with the drawings on which the contract is based, or with the specifications, then is the time to require that they be corrected, and not after the work is commenced.

When once the work is under way it is poor policy to complain that more is required than was figured on, or that he, the contractor, has taken the work too cheap. Such complaints seldom do any good, and often injure the reputation or standing of the contractor.

Building contractors are also often very careless in making contracts with one another; the usual contract being merely the verbal acceptance of a bid, and even the latter is not always put in writing, or if in writing, not in a proper form. It has always seemed to the writer, that of all business men, building contractors and subcontractors are the most careless about their business affairs. This is probably due, largely, to the fact that they are generally pretty well acquainted with each other, and have, perhaps, done business together several times in this loose fashion with satisfactory results. Then, too, writing materials are not always at hand for making a contract, and the amount is simply jotted down in a note-book, and the rest left to a verbal understanding or to custom.

Again, many people, and they are not all contractors, appear to have the idea that to request a written contract or a written order implies distrust. This certainly does not follow, as even where both parties to a business transaction have the highest sense of honor, there is often a chance for a misunderstanding, or one party may have in his mind something different from that in the mind of the other, which, when the contract is put in writing, would be brought out. Again, in making a verbal contract one is liable to forget some important provisions or conditions which would not be so readily overlooked in making a written contract. No honest person can object to put in writing that which he has promised verbally, and in case of the failure or death of either party, a written contract will save many complications. Even written contracts are sometimes interpreted differently by the different parties thereto, as the writer has found in his own experience, but they are far more satisfactory than verbal ones.

The contracts between contractor and subcontractor need not be as elaborate as that between owner and contractor, the principal points to be defined being the money consideration, terms of payment, what is to be done and when it is to be done, and that it is to be done according to the plans and specifications. A contract embodying these points with sufficient clearness can be printed and put up in pads, of a size that can be carried in the pocket, and an indelible pencil or fountain pen can be used for filling them out. The written acceptance of a bid, if the bid embodies the points above mentioned, usually makes a sufficient contract, especially if the bid allows a fair profit on the work. It is in those cases where the work is taken at too low a figure that a contract is most necessary, at least to the general contractor.

Another serious mistake often made by contractors is in causing the architect unnecessary trouble, annoyance, and loss of time. We believe that nearly all contractors will admit that the good-will of the architects is of some financial value to them, and yet many contractors act as though it made no difference to the architect whether the work drags or not, or whether he has to send for the contractor several times to finish up his work or to get it ready so that other workmen may proceed, or has to settle disputes between the different contractors over some trivial matter.

The architect receives, practically, a fixed price for his supervision of the work, and if he has to visit the building for six months, when the work might as well be done in five, his expense of time and labor is increased 20 per cent. He cannot, therefore, be expected to desire a contractor to do his work that will make his own services expensive and laborious.

Some contractors, and more foremen also, often have the very annoying habit of urging some different way of doing the work from that shown or specified, and of haggling over little things, and some are even fond of advising the architect as to what will look best and how he might improve his design by making certain changes.

Both of these habits are not relished by architects, and the writer believes result in a financial loss to the contractor, through loss of work and favors that might otherwise, perhaps, be extended. Contractors also often lose the favor of both architect and owner by their utter unconcern as to how the subcontractors under them do their work, and as to the materials which they supply. It is true that, in a great measure, the general contractor makes no profit on his subcontracts, and many apparently think that for this reason it is no concern of theirs how the subcontractor does his work, provided it does not interfere with their own branch of the work, and manages to pass with the architect. This certainly is a mistaken idea, especially as it costs the general contractor little, or nothing, to keep a supervision over the different branches of the work and have them done right, thus securing a better building and saving the architect or his representative much trouble and annoyance. Contractors that do look after their subcontractors in this way stand much better with architects and owners, and are very likely to get a preference on account of it; they certainly are more likely to be invited to bid on work, while if they are notably negligent in this respect, they may not be given an opportunity to figure on another job, in the same office, at least.

The writer does not mean to imply that all contractors make the mistakes herein noted, nor that these mistakes are confined to any particular line of contractors; but that one or more of them are made by a great many contractors, he knows from his own experience, while he also believes that they can in a great measure be avoided, with benefit to the contractor, the architect, and the owner.

(Continued.)

Brick and Terra-Cotta Work In American Cities, and Manufacturers' Department.

NEW YORK. — Many report that they have more business in hand now, and in a hopeful state of negotiation, than has been the case since hostilities began with Spain. However, there will be no material revival until spring, when we hope all negotiations will be ended and all difficulties settled, in which case we can confidently predict that 1899 will be a great year for architects and builders.

No one, not even the man who leans by preference to the security market for his investments and for speculative diversion, questions the superiority of New York real estate over all other forms of investment and speculation when the prices are right. This means always and invariably when the property, at the price at which it can be bought, produces reliably, year in and year out, a rental equal to the normal rate of interest on bonds. In this connection it will be interesting to watch the outcome of the four great blocks which are now on the market, located near St. Patrick's Cathedral, in the most exclusive section of the city.

This is a phenomenal circumstance, and at the same time its cause is far from being detrimental to the real-estate interests of

CAPITAL, PRESS BUILDING, PHILADELPHIA, PA.
Executed in terra-cotta by the Standard Terra-Cotta Company.
T. P. Chandler, Architect.

that region. That these four blocks in the very heart of the up-town district are in the market is mainly the result of the up-town business movement, and the consequent upward movement of public institutions.

Two of the four blocks referred to belong to the Roman Catholic Orphan Asylum, one to the Women's Hospital, and the fourth to Columbia College. The taxpayers of the city will gain by the sale of these four blocks, as they are all now exempt from taxation, and as their sale will bring at least $6,000,000 worth of property under taxation.

The last regular dinner and meeting of the Architectural League was unusually interesting. The subject was, "The Improvement of the Water Front of New York." Addresses were made by Major Wells, 71st Regiment; Captain Taylor, of the battleship *Indiana*, who received an ovation; Messrs. Greene, Burr, and Morrison, prominent engineers; Messrs. Price, Harder, Thorpe, and Tilton, architects; and Messrs. Bush-Brown and Ruckstuhl, sculptors.

Among projected new buildings are: —

Montrose W. Morris, architect, has prepared plans for two three-

CAPITAL.
Executed in terra-cotta by the Conkling, Armstrong Terra-Cotta Company.
W. H. Allen, Architect.

story brick dwellings, to be built on Carrol Street, corner of West Prospect Park, Brooklyn; cost, $45,000.

Edward Wenz, architect, is preparing plans for four five-story brick flats, to be built on 117th Street, near Fifth Avenue; cost, $80,000.

James E. Ware & Son, architects, have prepared plans for a seven-story brick and stone apartment, to be built on West Central Park, near 94th Street; cost, $125,000.

Frank W. Herter, architect, has plans for four five-story brick flats, to be built on 54th Street, near Lexington Avenue; cost, $175,000.

Geo. F. Pelham, architect, has prepared plans for a five-story brick flat building, to be built on 138th Street, near Alexander Avenue; cost, $25,000. The same architect has prepared plans for a six-story brick and stone apartment, to be built on 91st Street; cost, $90,000.

J. B. McElfatrick & Son, architects, have planned a brick theater and music hall, to be built on Seventh Avenue corner of 42d Street; cost, $50,000.

CHICAGO. — It is conceded that architects are feeling more encouraged, probably because of the increase of sketches for prospective work, although it is a fact that as for actual work begun, as indicated by the taking out of permits, statistics show 8 per cent. decrease for the month as compared with even the poor business of the corresponding month last year.

In October occurred the death of Chicago's pioneer architect, Mr. W. W. Boyington came to this city in 1853. The Grand Pacific Hotel was one of the older buildings which he designed. Among the best known of the recent buildings for which he stood sponsor was the Illinois Building at the World's Fair, and the Columbus Memorial Office Building.

In the list of architects who appear to be busy is the name of F.

TRADE-MARK PANEL, BUILDING FOR W. B. CONKEY CO., HAMMOND, IND.
Executed in terra-cotta by the Northwestern Terra-Cotta Company.
George C. Nimmons, Architect.

BUSINESS BLOCK, WALNUT STREET, PHILADELPHIA, PA.
Cope & Stewardson, Architects.

Foltz, who includes in his "now in hand" a school building, some residences, and factories.

Frost & Granger have let contracts for a $250,000 union depot, at Omaha. The exterior will be mottled brick and the roof will be tile.

Wilson & Marshall have some fine residences on their list.

Robert Rae, Jr., is the designer of an important apartment building.

A. G. Lund is designing a large apartment building, and John R. Stone is making working drawings for a row of houses.

Dwight H. Perkins and Frank L. Wright are associated architects for a new church of especial interest.

Recent happenings at the Chicago Architectural Club are as follows: Evening, October 24, "smoker," at which Messrs. Fritz Wagner and William D. Gates spoke on the subject of "Terra-Cotta as a Building Material"; evening of October 31, "Hallowe'en" night was observed; evening of November 7, W. M. R. French, director of the Art Institute, gave a lecture on "The Value of a Line." This evening was also observed as "ladies' night"; evening of November 14, "smoker," at which Paul T. Potter spoke on "Plumbing in Buildings," and Henry Lord Gay on "Sewerage Disposal in Country Residences."

PITTSBURGH. — As a rule, most of the building operations in progress at this time of the year are those which have not been finished during the preceding summer, but with our dull spring and summer there has been little to last over and work is dull, both with architects and contractors; quite a number of smaller dwellings, mostly brick, are, however, being built, but a decided improvement is looked for after the first of the year, and the general improvement in all lines seems to warrant this feeling.

Possibly the most interesting item which has been noted lately was the announcement by Mr. Andrew Carnegie, at the exercises of Founder's Day at the Carnegie Institute, that as soon as arrangements could be perfected, he would place at the disposal of the trustees a sum, probably about $500,000, to be used in making an addition to the present building. The quarters occupied by the art galleries and the museum are badly crowded, and this addition has been greatly needed; but while there have been rumors that Mr. Carnegie would build it, this was the first official announcement of his purpose.

The third annual art exhibit of the Carnegie Institute was opened to the public November 3. This has become an important event not only here but in Europe. Committees are chosen in a number of art centers, and all pictures, before they can be forwarded here, must meet with their approval. The jury of awards, elected by competing artists, consisted this year of eight American, one English, and one French artist.

The following items of new work have been noted: —

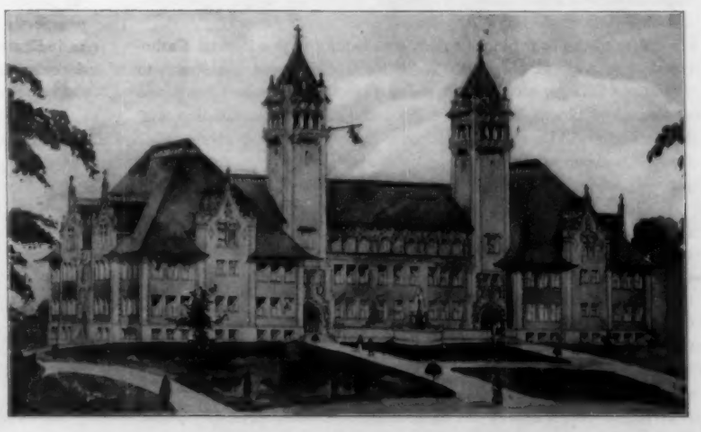
Architect C. M. Bartberger has recently let the contract for a new school building for the twentieth ward, Pittsburgh. It is to be built of brick and terra-cotta, and cost $115,000. He is also preparing plans for a large addition to the nineteenth ward school, Pittsburg; for a new school for the thirteenth ward, Allegheny; and for a new brick school at Wilmerding.

Work has been begun on the thirty-eight-room schoolhouse for the third ward, Allegheny; it is to be of stone, brick, and terra-cotta, and cost $200,000. F. C. Sauer is the architect.

Alden & Harlow have let the contracts for two branch office buildings for the Central District and Printing Telegraph Company. They have also prepared plans for a third of these buildings, to be built at McKeesport, Pa. The same architects have made plans for a new stone residence for Mr. J. G. Pontefract, Sewickley, Pa.

F. J. Osterling is preparing plans for a row of eighteen houses

PANEL, SCHOOL NO. 7, BAYONNE, N. J.
Executed in terra-cotta by the New Jersey Terra-Cotta Company.
Hugh Roberts, Architect.



SCHOOL BUILDING FOR THE OHIO INSTITUTION FOR THE EDUCATION OF THE DEAF AND DUMB, COLUMBUS, OHIO.
Richards & McCarty, Architects.

PUBLIC LIBRARY, ERIE, PA.
Alden & Harlow, Architects.

for Mr. C. L. Magee. They are to be built on Fifth Avenue, Pittsburgh.

W. J. Cast has let the contract for a new First Presbyterian Church, at Altoona, Pa.; cost, $50,000.

The exodus of the wealthier inhabitants of the down-town districts of Pittsburgh and from Allegheny seems to have stopped somewhat, and those especially who own the finer class of homes in these districts are turning toward Sewickley and the neighboring country, where many have recently bought considerable tracts of ground, and intend in the near future to build summer homes, in some cases of considerable size.

COLUMBUS.—There is being erected in this city a building of more than usual interest. It is a school building for the Ohio Institution for the Education of the Deaf, Richards & McCarty, architects.

The building is 240 ft. long by 110 ft. wide, and is practically three stories in height above a finished basement. The first and second stories and the central part of the third story will contain thirty-six schoolrooms, with a superintendent's office, cloak rooms, etc. The third story of one wing will be fitted up for a library, with reading rooms, etc., and the third story of the other wing will be fitted up for an art gallery, with studios, photographers' rooms, etc., while the large corridor connecting these wings will be used for an exhibition room to display the work of the institution. The gymnasium is in a semi-detached building in the rear connecting with the main basement. In one wing are locker rooms, showers, and a plunge for the boys, and in the other wing are like accommodations for the girls. The front part of the basement is used for chemical laboratories, bicycle rooms, and general lavatories.

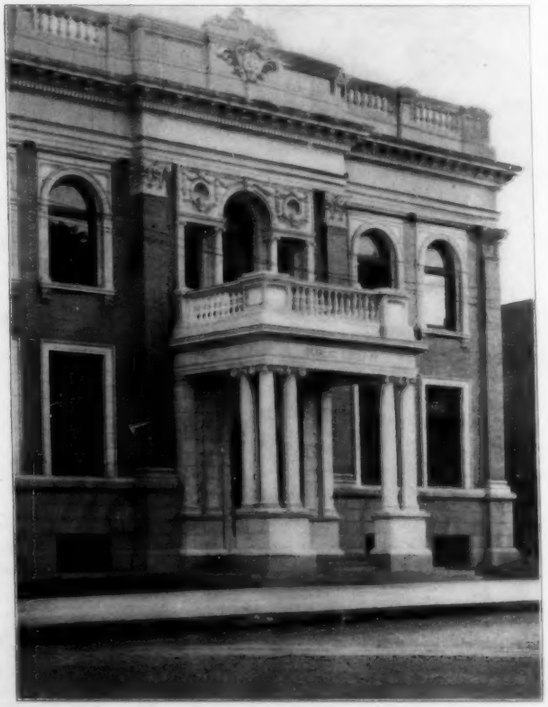
The exterior walls will be faced with press brick furnished by the Columbus Brick and Terra-Cotta Company. The facing for the basement walls will be gray brick, Norman shape, and for the walls above the brick will be standard size, using gray brick for the corners and a rich buff brick for the body of the work. The ornamental trimmings will be a gray sandstone to match the color of the brick.

CERAMIC MOSAIC *v.* MARBLE PAVEMENT.

BY H. C. MUELLER.

THERE is a popular idea that nature never does things by halves, that when she produces a good material it is very nearly perfect for its purpose. As a matter of fact, however, few of the natural products used in building operations are perfect or uniform in their quality, and this applies with special force to the marbles which are used very frequently and with most gratifying success in an artistic sense for pavements and floorings. There are a few marbles which are excellent, and mosaics of marble as well as marble tiling have been used for a long period, replacing in many instances the encaustic floor tiles. If we may judge, however, by the continual search after something which shall be better than the marble, it is fair to assume that marble is not perfectly satisfactory, and all the indications point to decided superiority in some respects on the part of mosaic and tile work manufactured from burnt clay.

Within the past few years a tendency has been developed to substitute very largely the artificial for the natural product. This has shown itself principally in the East and in large cities where marble mosaic is extensively used. It has been found that the substantial appearance of the marble mosaic is deceptive, and that the work is not as strong as it seems. The patching of costly marble mosaic work is not an uncommon occurrence, and it is especially found that the wear, even under the best circumstances, is apt to be uneven, and that this is not obviated entirely by using a single apparently even quality of marble, as in a lot of marble blocks the quality will vary. Furthermore, under many circumstances, it is almost impossible to keep the marble mosaic perfectly clean, and though marble answered the purpose amply for the houses and temples of the Greeks and Romans and



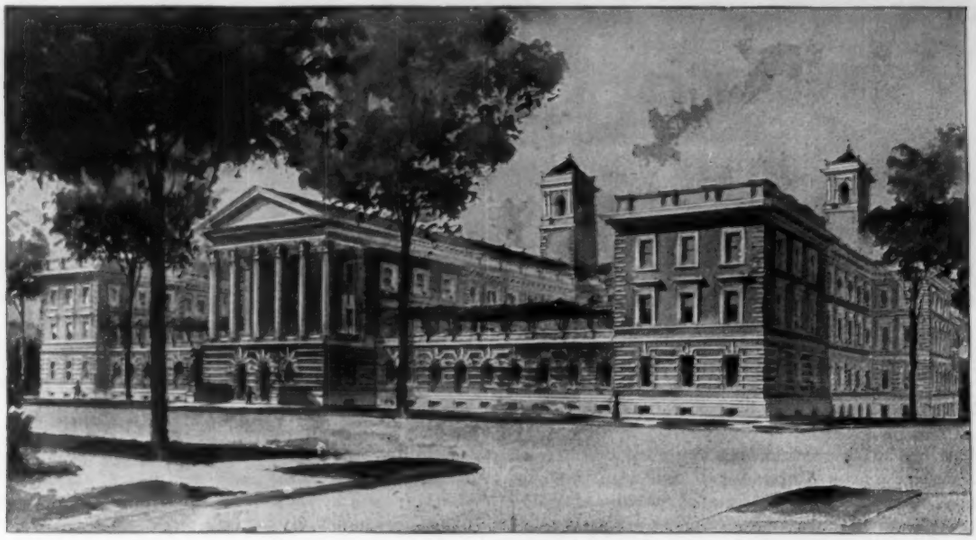
DETAIL OF FRONT, PUBLIC LIBRARY, ERIE, PA.
Alden & Harlow, Architects.

did not show wear when traversed by sandaled feet, it is not wholly adequate for a vestibule or lobby in a New York or Chicago hotel or office building.

The tile manufacturers have long appreciated the possibilities of burnt clay for flooring. The advent of the vitreous floor tile,

which is quite recent in its appearance, was a long step in advance, as it is a material which surpasses in hardness any known natural stone. As the public demand requires, from artistic reasons as well as convenience of setting, a mosaic composed of small pieces, the tile cement mortar and tile without splitting either parts of the mortar or parts of the tile.

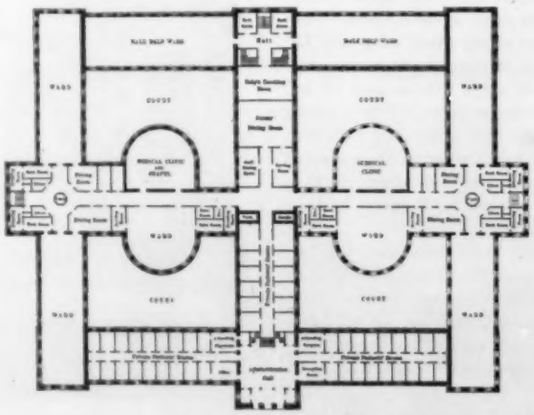
The color of marble mosaic floors is very easily obscured by wear. It can be brought back by scouring and polishing, but the



(From *The Illustrated Buffalo Express.* Copyright, 1895, by Geo. E. Matthews & Co.)

BUFFALO GENERAL HOSPITAL, BUFFALO, N. Y.
George Cary, Architect.

manufacturers have brought forth the ceramic cube mosaic, which is now in the market as a strong competitor for favor with the ordinary Roman block mosaic. Marble, though looked upon by the casual observer as something extremely hard, is in fact not hard at all, rather suggesting hardness on account of its polished surface, which is unyielding to the touch. Burnt clay, with its sometimes velvety surface, does not look as hard as marble, yet the expert knows very well that marble may be scratched with soft iron, while reasonably hard burnt clay cannot be touched with a hard steel point. Again, while any floor covering which is composed of marble blocks laid upon a necessarily more or less yielding foundation is liable to develop cracks in the surface, it has been found by experience that a mosaic composed of minute fragments of burnt clay is much more rigid and less liable to develop unsightly cracks than is the marble mosaic. This is for reasons which can be readily appreciated. When the ordinary marble mosaic is set, it has to be ground and polished off on account of irregularity of the cubes, and this grinding process sometimes has a tendency to break the set of the cement, so that it is a very easy matter to dislodge individual cubes, and in case of repairs it is found that the cement does not adhere very closely to the marble. On the other hand, vitreous tiling forms a complete union with Portland cement mortar. The silica contained in the cement attacks the silica developed to a glass-like set in the vitreous tile and adheres to it in such a degree that it will be impossible to part



GROUND PLAN, BUFFALO GENERAL HOSPITAL, BUFFALO, N. Y.
George Cary, Architect.

surface of the vitreous tiling is so hard that the scratching due to walking over it does not deface the surface, and it is impossible to scratch or stain it. As the surface becomes polished through wear, the colors remain the same.

In an artistic sense, when marble work is just right, it is extremely satisfactory, but any one who has experimented with color attempts in marble mosaic knows how limited is the available palette. The best colored marbles are the expensive ones, and for ordinary conditions the cost is so great that they are not used at all. The choice is limited, in this market, at least, to a rather dirty green, two shades of yellow, a dull red, black and white, and the varying shades of Tennessee. On the other hand, with vitreous tile there is almost no limit to the range of the possible colors, and they are all of practically the same cost, so that the artist in using the latter material has a perfectly free hand and can work out his color scheme in the humblest building without the restrictions of prohibited colors.

CURRENT ITEMS OF INTEREST.

THE new Mercantile Building, New York City, Robert Maynicke, architect, Thos. J. Reilly, builder, will have a front of semi-glazed brick, which are being furnished by the American Enameled Brick and Tile Company.

DECKER & ST. CLAIR, the general contractors for the new

GARDEN VASE.
Executed in terra-cotta by the Winkle Terra-Cotta Company.
Barnett, Haynes & Barnett, Architects.

church in Winsted, Conn., have let the contract for furnishing the structural ironwork in the building to the Berlin Iron Bridge Company, of East Berlin, Conn.

CHAMBERS BROTHERS COMPANY, of Philadelphia, report a decided improvement in their business during the past month. They are giving especial attention to the trade South, and are making new customers in that section.

THE BERLIN IRON BRIDGE COMPANY, East Berlin, Conn., are erecting for the Seamless Metal Company, Sing Sing, N. Y., across the railroad tracks connecting the different parts of their plant, a steel foot bridge.

THE DAGUS CLAY MANUFACTURING COMPANY are furnishing the face and molded brick for the First National Bank, at Fairmont, W. Va. These are an old gold mottled brick. They are also furnishing a light pink brick for the residence of Mr. L. B. Cushman, North East, Pa.

THE BERLIN IRON BRIDGE COMPANY, of East Berlin, Conn., are erecting for the United Gas Improvement Company, Waterbury, Conn., the steel work for a generator room and an engine room. These roofs are to have steel trusses, supporting the roof covering.

JOHN H. BLACK, Buffalo representative of the Kittanning Brick and Fire Clay Company, is furnishing the vitrified buff brick that is being used in the interior of the new addition to the Buffalo Cooperative Brewery, Esenwein & Johnson, architects; also the gray bricks being used in the Albermarle and Aberdeen apartment houses, John S. Rowe, architect.

THE CELADON TERRA-COTTA COMPANY are supplying their roofing tile for the following new buildings: Residence for J. W. Mitchell, Columbus, Ohio, Yost & Packard, architects; residence for L. Hicklem, Columbus, Ohio, E. W. Hart, architect; office for Dr. C. M. Taylor, Columbus, Ohio, W. T. Mills, architect; bathing establishment, Revere Beach, Mass., Stickney & Austin, architects.

THE ST. LOUIS TERRA-COTTA COMPANY wish announced the fact that the company has been recently reorganized, and under the present management is in a position to guarantee satisfactory work and prompt deliveries on all contracts which may be placed with them.

The entire plant has been overhauled and fully equipped with the best terra-cotta machinery, the kiln capacity increased, and an enameling department added for the manufacture of enameled and glazed terra-cotta and enameled brick. The modeling department is in charge of experienced men, thoroughly competent to execute difficult work.

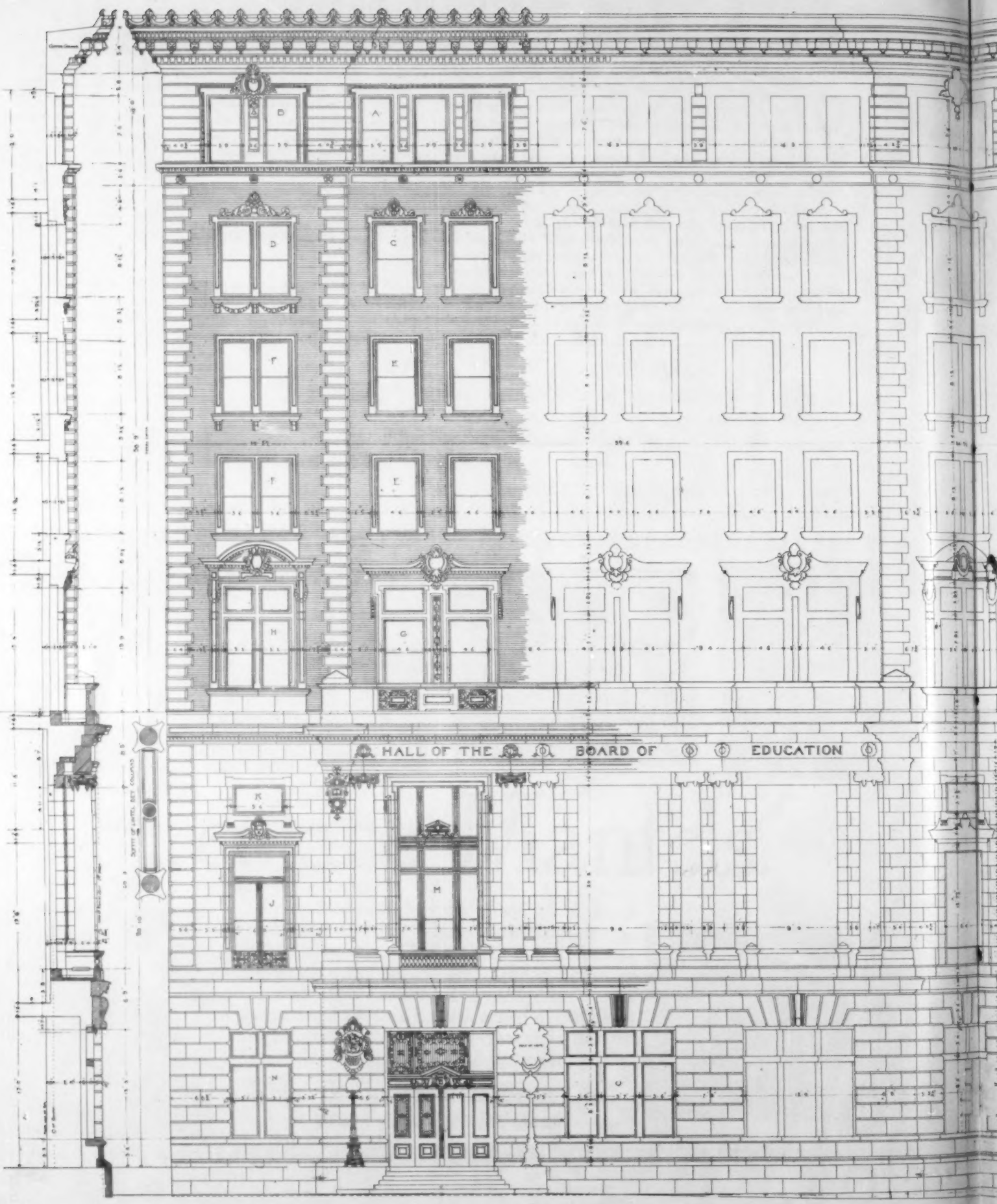
The company would be glad to render estimates on any work in their line.

THE following new buildings are being or are about to be equipped with the Bolles Revolving Sash or the Queen Overhead Pulleys, or both: Bourne Office Building, ten stories, Liberty Street, New York City, Ernest Flagg, architect (Bolles Revolving Sash and Queen Overhead Pulleys); Vicent Office Building, sixteen stories,

RESIDENCE, BEACON STREET, BOSTON.
McKim, Mead & White, Architects.

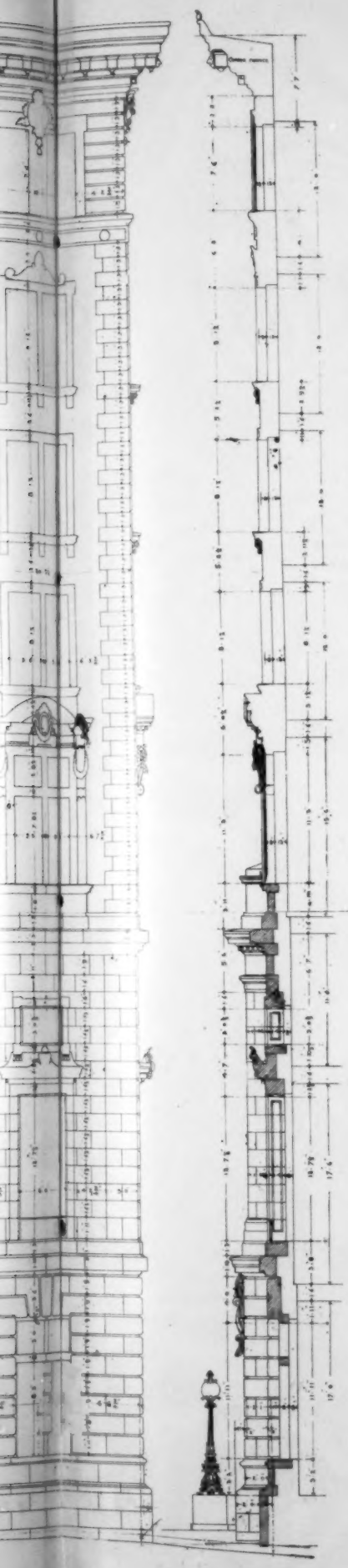
Duane Street and Broadway, New York City, George B. Post, architect (Bolles Revolving Sash and Queen Overhead Pulleys); Mott Avenue Public School, New York City, C. B. J. Snyder, architect (Bolles Revolving Sash); Auduborn Avenue Public School, New York City, C. B. J. Snyder, architect (Bolles Revolving Sash); apartment house, Fifth Avenue and 45th Street, New York City, J. O'Rourke & Sons, architects (Bolles Revolving Sash and Queen Overhead Pulleys); German Liederkranz Club House, Brooklyn, N. Y. (Bolles Revolving Sash); Seelye Hall, Smith College, Northampton, Mass., York & Sawyer, architects (Bolles Revolving Sash and Queen Overhead Pulleys); New York Hospital, New York City, Cady, Berg & See, architects (Queen Overhead Pulleys); Caledonia Club, New York City, Alfred H. Taylor, architect (Bolles Revolving Sash).

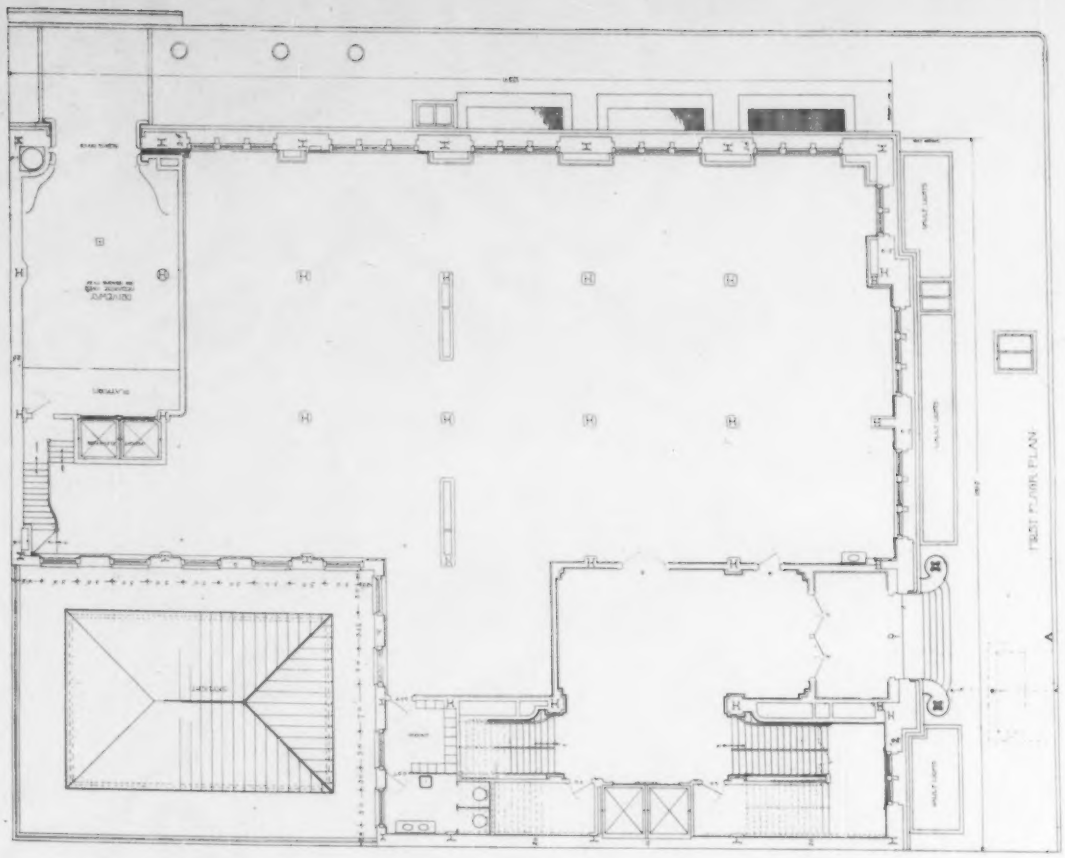
One of the most annoying things in any house is a sliding door hanger that will not run smoothly; that will leave the track, stick, or otherwise behave in an unpleasant manner just when such things cause most inconvenience. Lately, what bears every evidence of being quite the ideal parlor door hanger has been placed on the market by The McCabe Hanger Manufacturing Company, manufacturers of hangers for parlor, barn, fire, elevator, and accordion doors. The hanger in question is a perfect device and a gem in the mechanical way. The track is steel, and the wheels of the carriage are turned wood fiber, thus assuring the least possible noise. The carriage has ball bearings and case-hardened cones, and is constructed along the line of a bicycle bearing. The hangers have been used in Biltmore, the Vanderbilt estate in North Carolina, the Carnegie estate in Florida, also the New York City house. They will also be used in the Vanderbilt house on Fifth Avenue, now undergoing extensive repairs and decorations. They were used throughout the new Sherry Building and the Columbia Library Building. In the elevator hangers this firm have been unusually successful, theirs having been specified on most of the large buildings that have been built all over the country in the last few years.

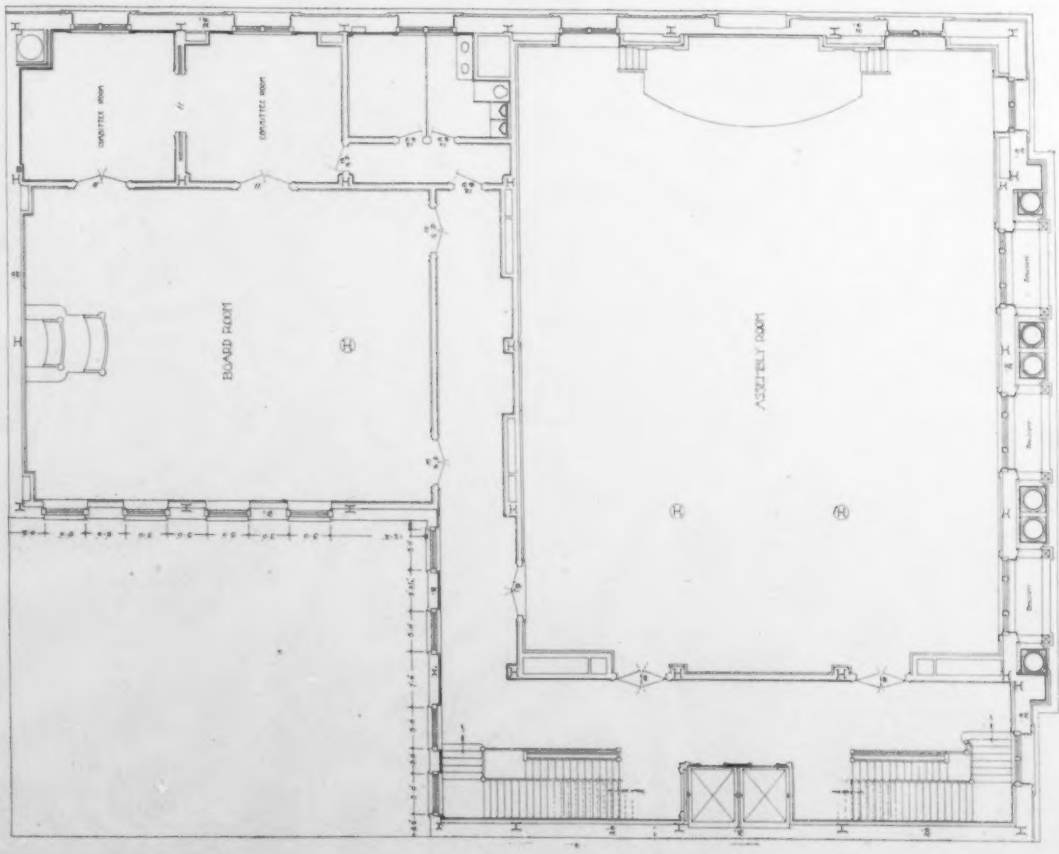


HALL OF THE BOARD OF EDUC

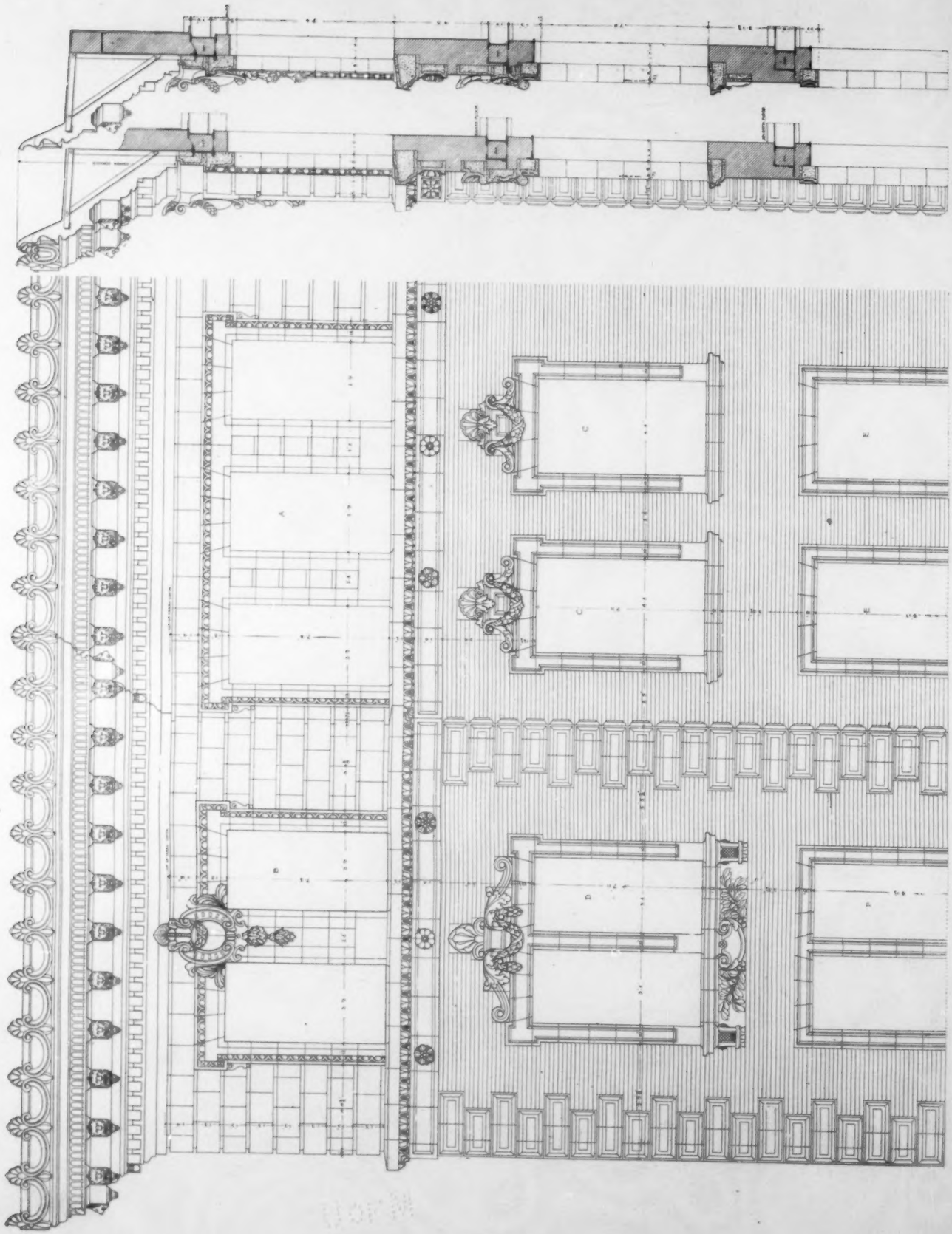
N. LE BRUN & SONS



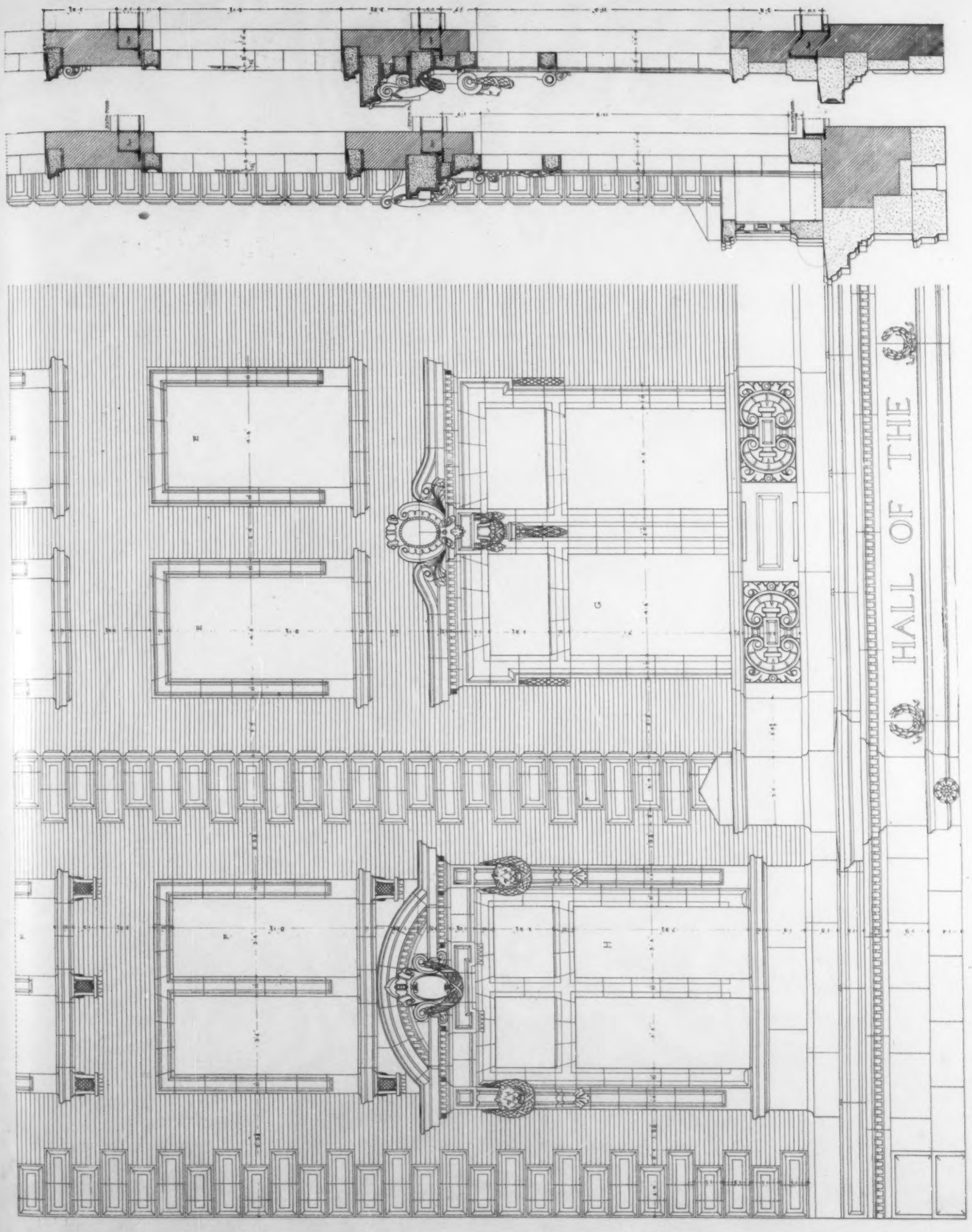




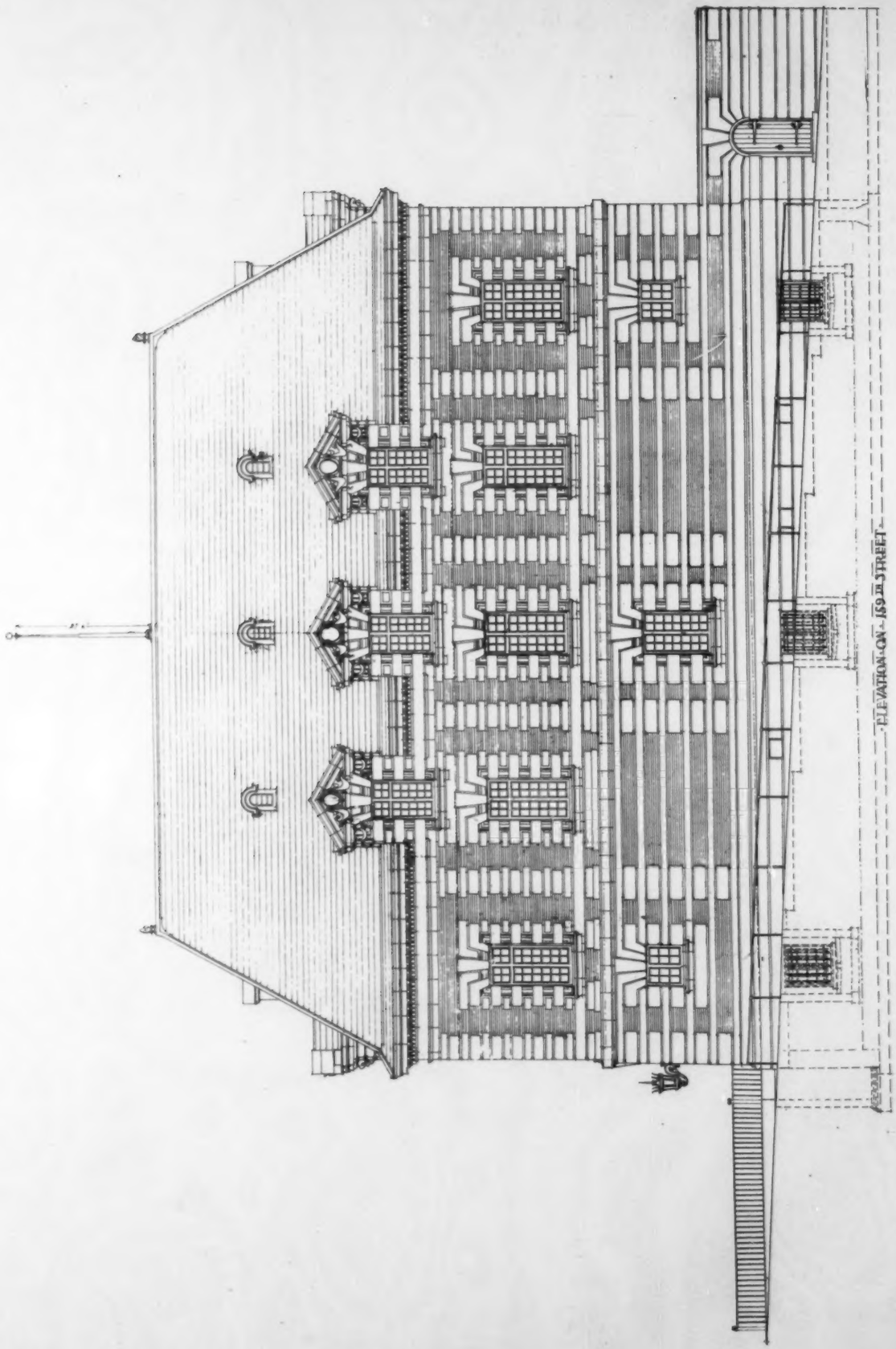
D OF EDUCATION, NEW YORK CITY.
BRUN & SONS. ARCHITECTS.



DETAIL OF CORNICE AND UPPER PORTION OF HALL OF THE BOARD OF EDUCATION, NEW YORK CITY.
N. LE BRUN & SONS, ARCHITECTS.



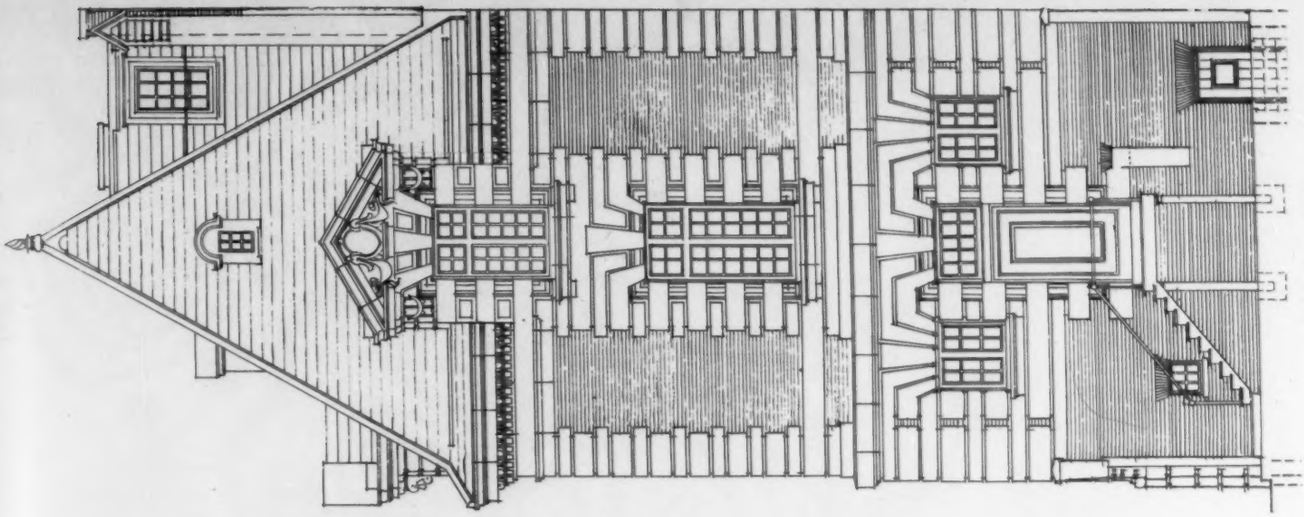
DETAIL, 3D AND 4TH STORIES, HALL OF THE BOARD OF EDUCATION, NEW YORK CITY.
N. LE BRUN & SONS, ARCHITECTS.



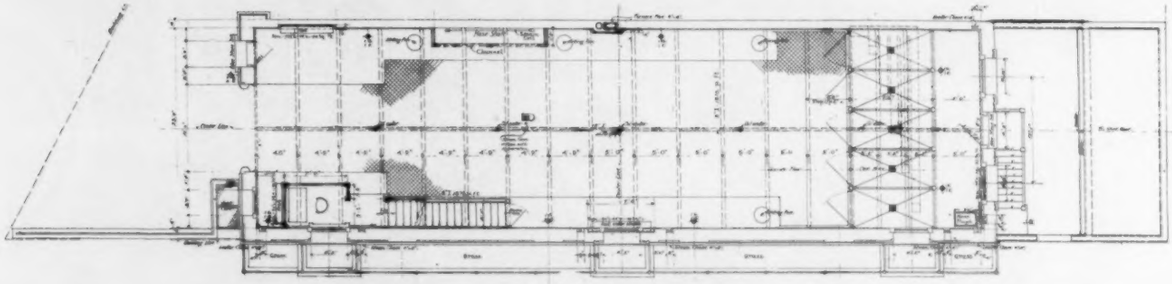
ELEVATION ON 159 E. 51 STREET.

HOUSE FOR AN ENGINE COMPANY, CITY OF NEW YORK.

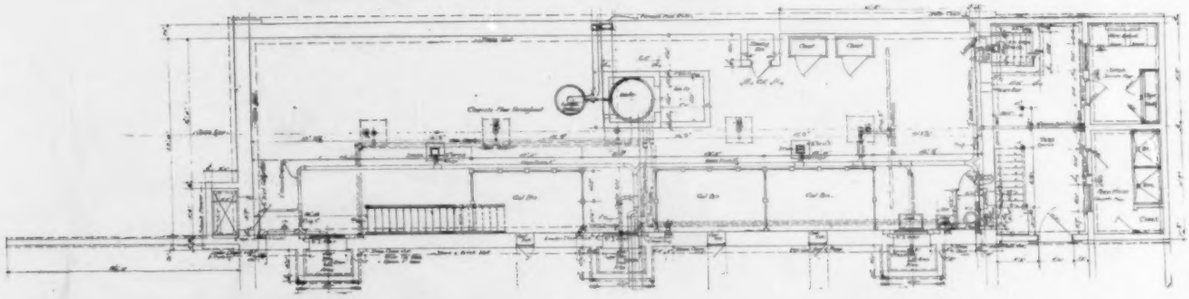
EDWARD PEARCE CASEY, ARCHITECT



REAR ELEVATION.



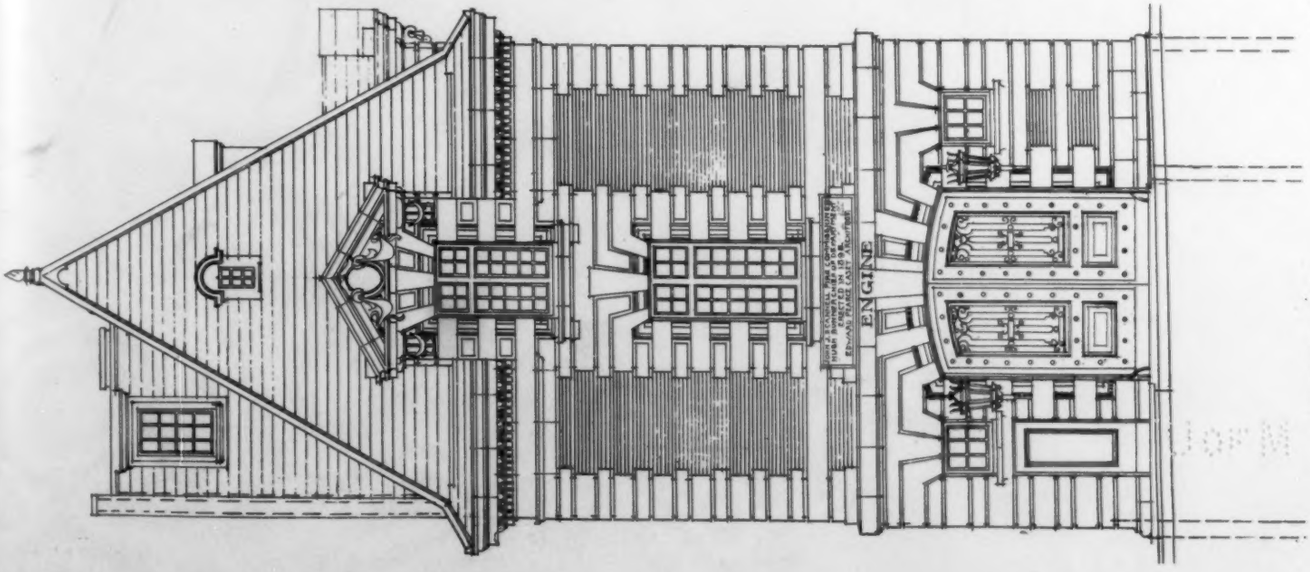
FIRST STORY.



BASEMENT.

HOUSE FOR AN ENGINE COMPANY, CITY OF NEW YORK.

EDWARD PEARCE CASEY, ARCHITECT.

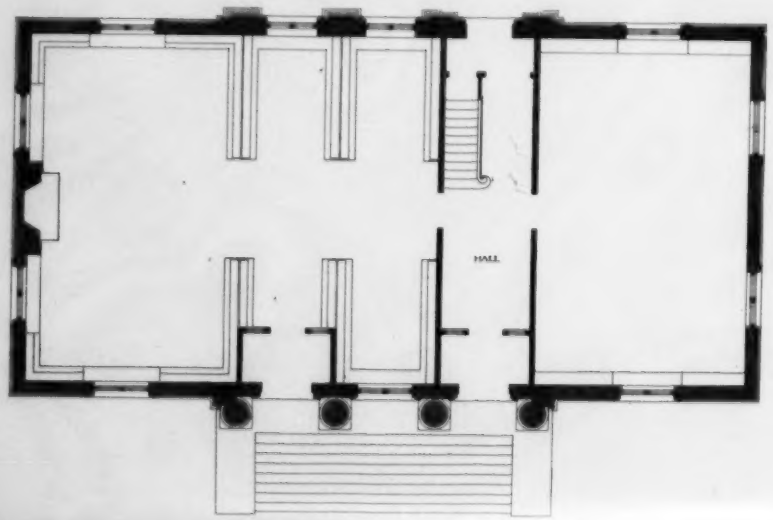


FRONT ELEVATION.

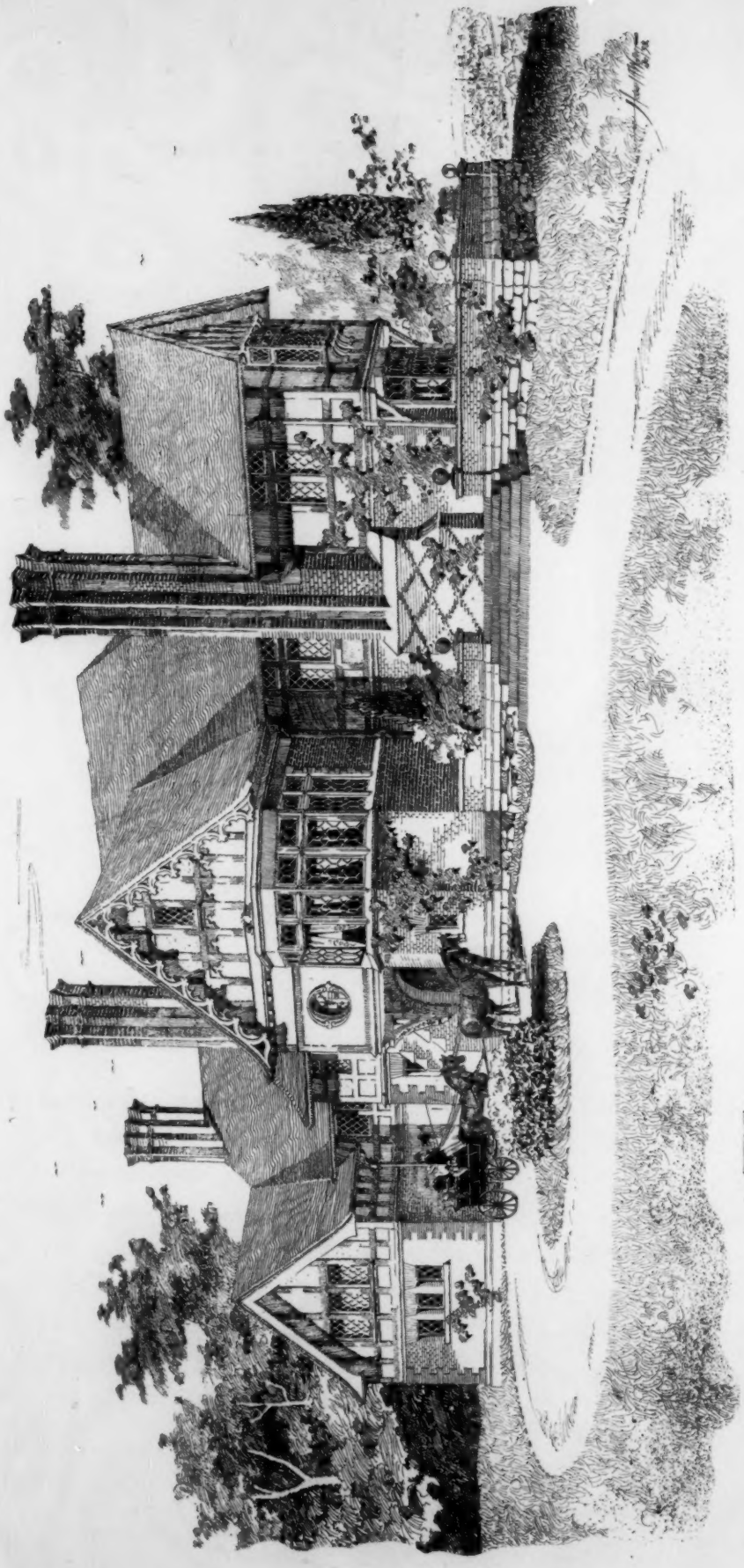
FRONT ELEVATION.

NEW LIBRARY BUILDING, ST. JOHN'S COLLEGE, ANNAPOLIS, MD.

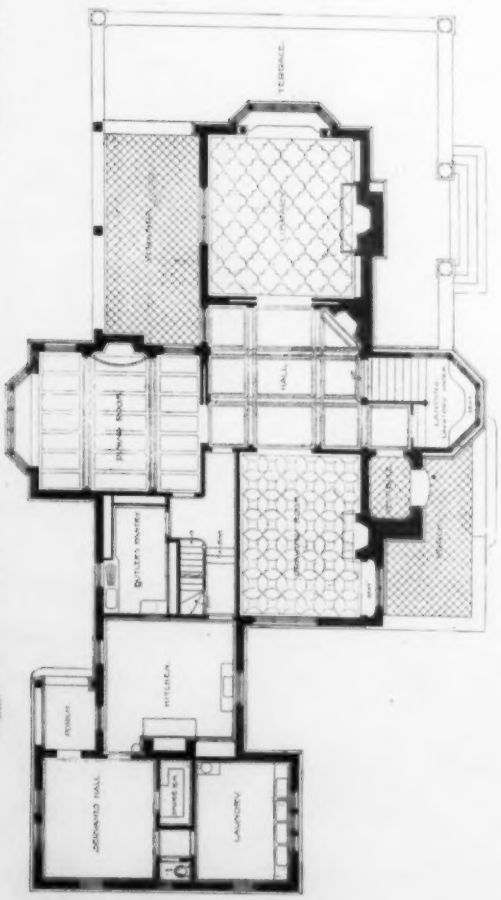
T. HENRY RANDALL, ARCHITECT.



FIRST FLOOR PLAN.



"LONGACRE," LLEWELLYN PARK, N. J.
ALGERNON S. BELL, ARCHITECT.



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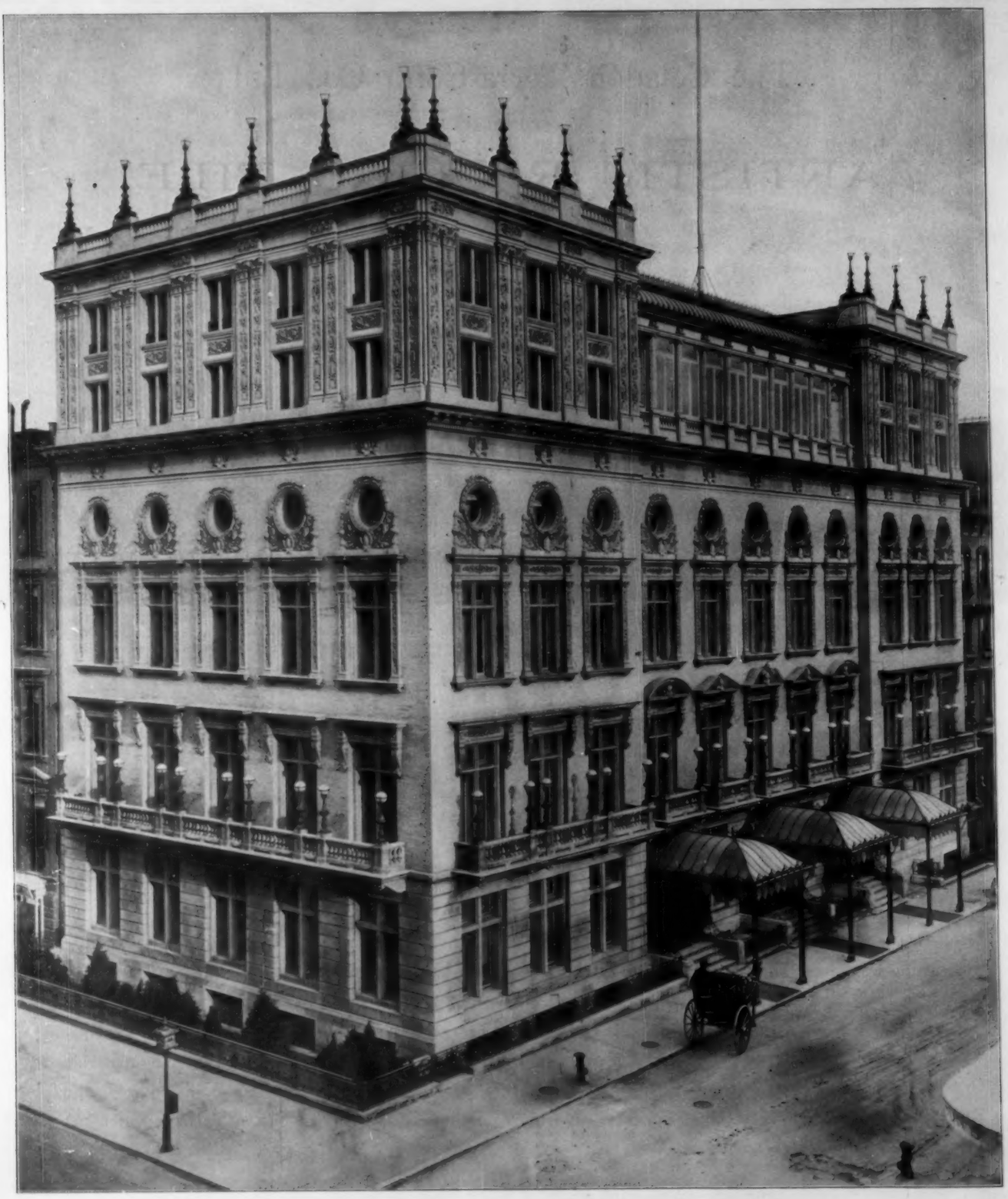

THE DELMONICO BUILDING, 44TH STREET AND FIFTH AVE., NEW YORK CITY.
JAMES BROWN LORD, ARCHITECT.

TERRA-COTTA AND BRICK BY THE

NEW YORK ARCHITECTURAL TERRA-COTTA COMPANY,

PHILADELPHIA. 38 PARK ROW, NEW YORK CITY. BOSTON.